

COLD SOLUTIONS

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



WORLDWIDE LEADERS

40

YEARS OF EXPERIENCE

4,205

CUSTOMERS PER YEAR

6

COMPANIES

9

PRODUCTION AND
COMMERCIAL FACILITIES

629

EMPLOYEES
THROUGHOUT THE WORLD

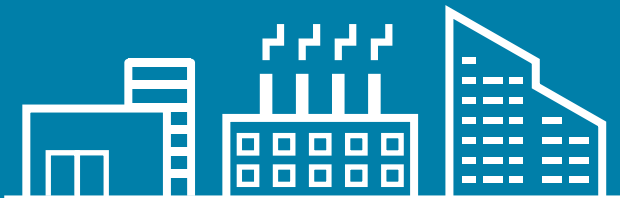
100%

ITALIAN DESIGN

298

A TURNOVER OF
MILIONS OF EURO

MORE VALUE FOR YOUR PROJECT



A SOLUTION FOR EVERY NEED

Thermal and sound insulation, sturdiness, air tightness, fireproof; and then 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 **ISOFRÖZEN** and **ISOFRÖZEN HT** systems for cold room projects.



**Greater comfort
less costs**



**Tangible
sustainability**



**Enhanced safety
against fire**





albis



TABLE OF CONTENTS

PRODUCT RANGE

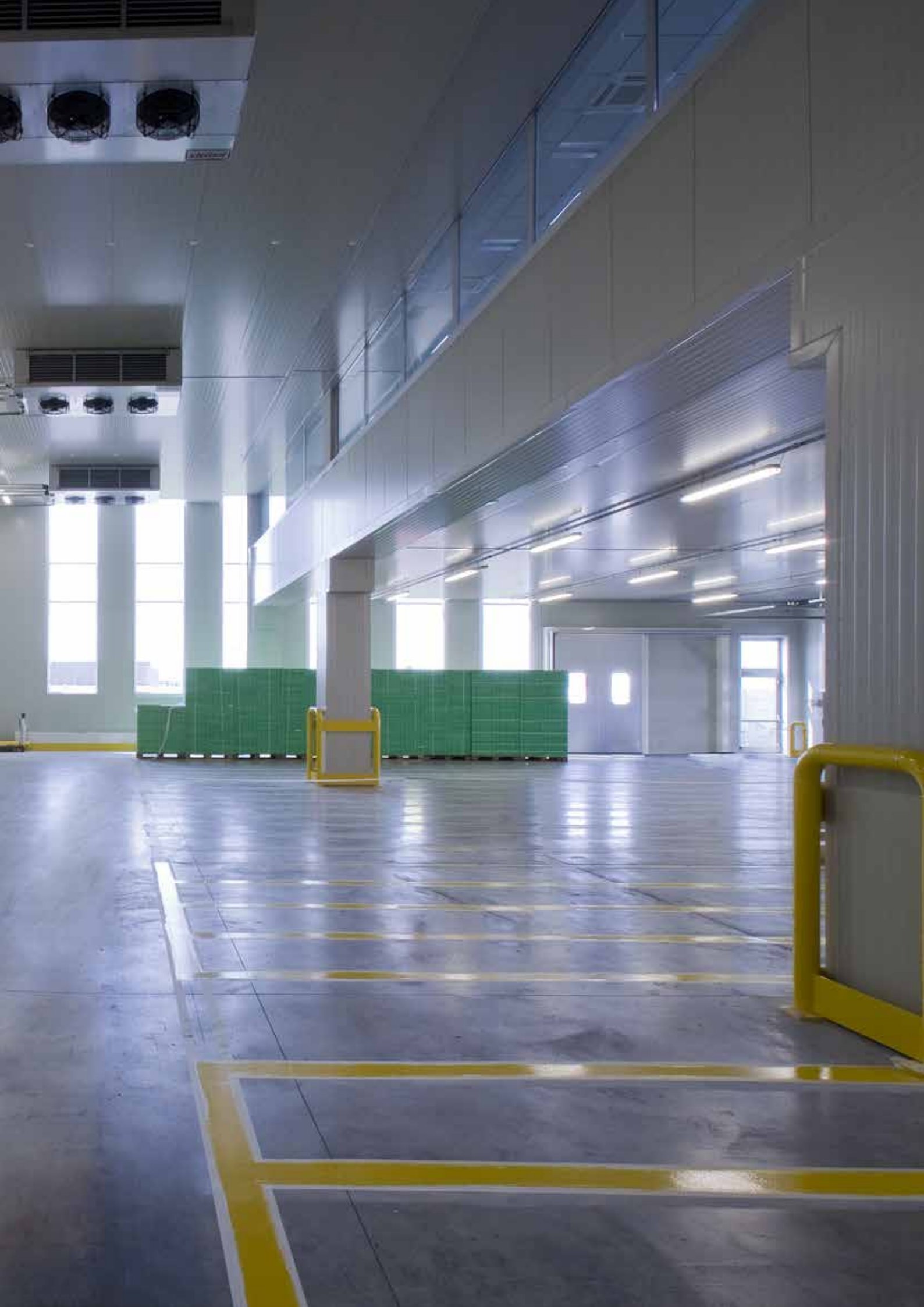
| | |
|--------------------------------------|----|
| SANDWICH PANELS | 14 |
| DIMENSIONAL CHARACTERISTICS | 15 |
| JUNCTION SYSTEMS | 16 |
| INSULATION | 18 |
| BEHAVIOUR IN CASE OF FIRE | 19 |
| CERTIFICATIONS AND PERFORMANCE | 20 |
| STATIC FEATURES | 21 |
| ANTIBACTERIAL THERAPY | 22 |
| METAL FACINGS | 23 |

ACCESSORIES AND SOLUTIONS

| | |
|------------------|----|
| CHANNELS | 29 |
| ANCHORING | 33 |
| FRIGO BASE | 37 |
| FRIGO PLUS | 41 |





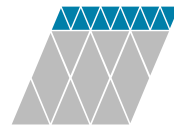






PRODUCT RANGE





14

SANDWICH PANELS

15

DIMENSIONAL
CHARACTERISTICS

16

JUNCTION SYSTEMS

18

INSULATION

19

BEHAVIOUR IN CASE
OF
FIRE

20

CERTIFICATIONS AND
PERFORMANCE

21

STATIC FEATURES

22

ANTIBACTERIAL
THERAPY

23

METAL FACINGS

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

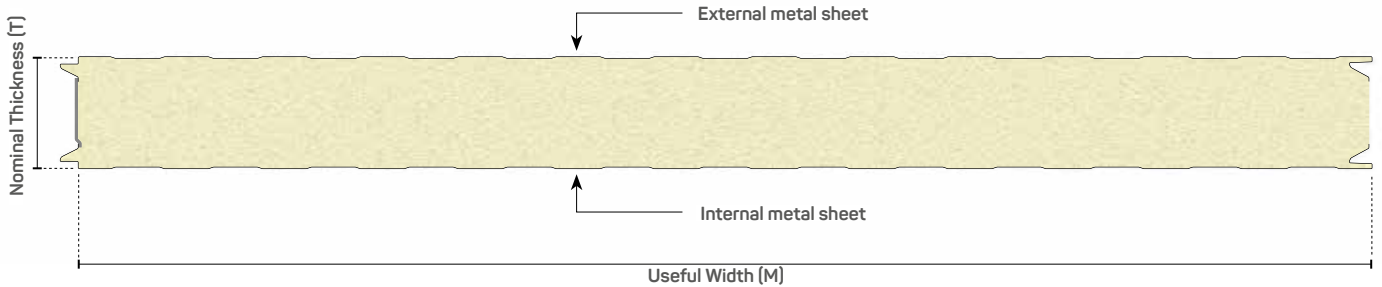
PROFILE

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.

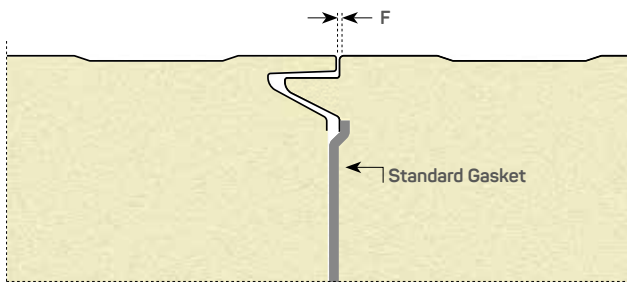
To correctly choose the type of profiling, Isopan recommends checking the actual production feasibility at the reference facility.

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

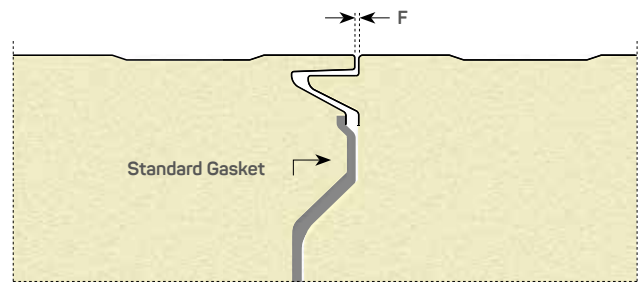
DIMENSIONAL CHARACTERISTICS (in accordance with EN 14509)



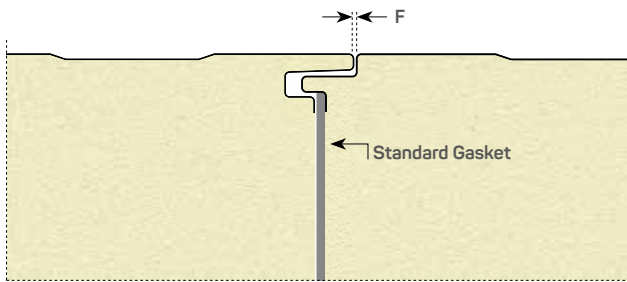
PANELS - JOINTS - TOLERANCES



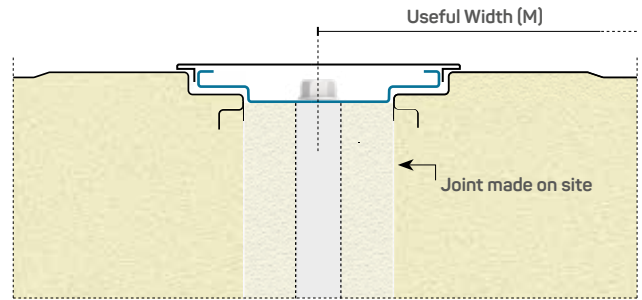
ISOFRÖZEN



ISOFRÖZEN HT



ISOFRIGO



ISOFRIGO G.I.

| | Width (M) | Nominal Thickness (T) mm | | | | | |
|---------------|---------------------|--------------------------------|------|------|------|------|------|
| | mm | 80 | 100 | 120 | 150 | 180 | 200 |
| Isofrozen | 1150; 1000* | ● | ● | ● | | | |
| Isofrozen HT | 1150; 1000* | | | ● | ● | ● | ● |
| Isofrigo | 1000; 1155 | ● | ● | ● | ● | ● | ● |
| Isofrigo G.I. | 1070; 1225 | ● | ● | ● | ● | ● | ● |
| | Thickness Sheets mm | Panel weight Kg/m ² | | | | | |
| Steel | 0.5 / 0.5 | 11.6 | 12.2 | 13 | 14.2 | 15.6 | 16.2 |
| Steel | 0.6 / 0.6 | 13.1 | 13.9 | 14.7 | 15.9 | 17.1 | 17.9 |

* Width obtainable upon approval

| 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.

JUNCTION SYSTEMS

The cold store room is a room where a stable and pre-set temperature is maintained.

The temperature depends on the intended function for the cold room. An important feature for a cold room is maintaining the temperature constant: when the cold room starts operating, the temperature difference established between the inside and outside generates a proportional pressure difference.

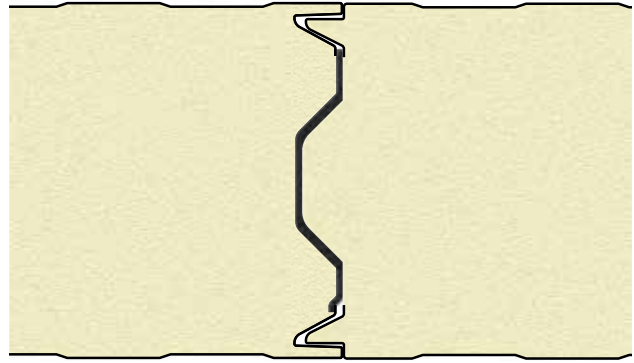
The natural tendency to re-balancing the pressure gradient would trigger spontaneous air seepage from outside to the inside of the cold room (in case of rooms with lower temperature than outside, in the opposite direction otherwise).

Besides the obvious considerations on the unfavourable thermal flow related to ΔT and tending to reduce cold room efficiency, this phenomenon – in case of excessive casing permeability to humid air – would lead to outside water vapour and air reaching cold areas of the store room.

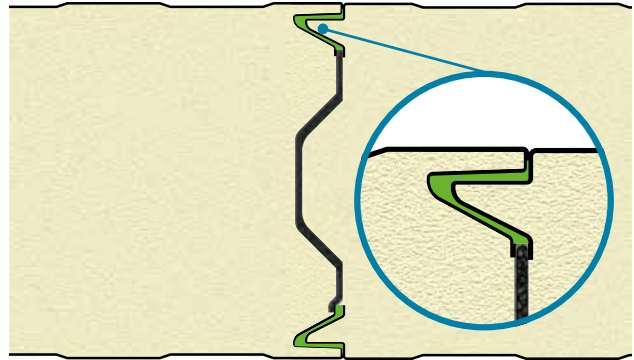
The correct choice of the joint type between panels is therefore of the utmost importance, as it determines air permeability between the external and internal environment of the room.

TYPES OF JOINTS EXAMPLE ON ISOFROZEN

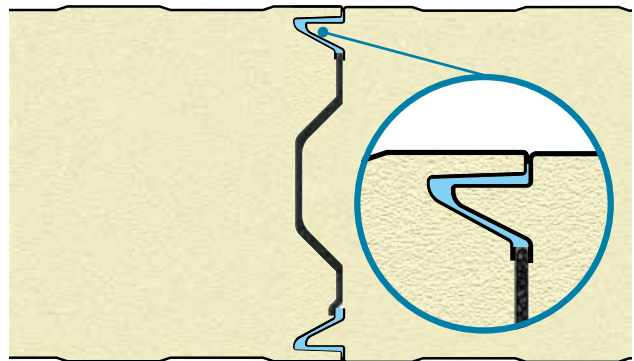
DRY JOINT



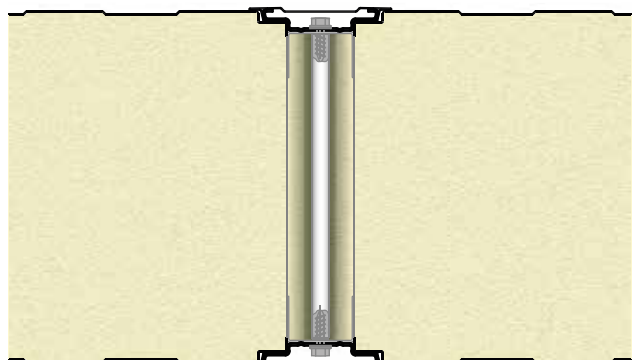
JOINT WITH BITUMINOUS SEAL



JOINT WITH THIXOTROPIC SEALANT



INJECTED JOINT



POSITIVE PRESSURE

NEGATIVE PRESSURE

DESCRIPTION

| AIR PERMEABILITY | | |
|------------------|---|---|
| AP | m ³ / m ² h pitch 1000 | m ³ / m ² h pitch 1150 |
| 50 | 0.01 | 0.01 |
| 67 | 0.05 | 0.04 |
| 91 | 0.09 | 0.08 |
| 122 | 0.12 | 0.10 |
| 165 | 0.18 | 0.16 |
| 223 | 0.24 | 0.21 |
| 301 | 0.38 | 0.33 |
| 407 | 0.52 | 0.45 |
| 549 | 0.64 | 0.56 |
| 741 | 0.85 | 0.74 |
| 1000 | 1.07 | 0.93 |

| AIR PERMEABILITY | | |
|------------------|---|---|
| AP | m ³ / m ² h pitch 1000 | m ³ / m ² h pitch 1150 |
| 50 | 0.01 | 0.01 |
| 67 | 0.03 | 0.03 |
| 91 | 0.08 | 0.07 |
| 122 | 0.10 | 0.09 |
| 165 | 0.16 | 0.14 |
| 223 | 0.20 | 0.17 |
| 301 | 0.30 | 0.26 |
| 407 | 0.46 | 0.40 |
| 549 | 0.62 | 0.54 |
| 741 | 0.79 | 0.69 |
| 1000 | 1.01 | 0.88 |

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.

**Average Joint Thermal Transmittance [Thickness 200 mm]:
Uf = 0.156 W/m²K**

| AIR PERMEABILITY | | |
|------------------|---|---|
| AP | m ³ / m ² h pitch 1000 | m ³ / m ² h pitch 1150 |
| 50 | 0.01 | 0.01 |
| 67 | 0.02 | 0.02 |
| 91 | 0.06 | 0.05 |
| 122 | 0.09 | 0.08 |
| 165 | 0.15 | 0.13 |
| 223 | 0.21 | 0.18 |
| 301 | 0.35 | 0.30 |
| 407 | 0.48 | 0.42 |
| 549 | 0.61 | 0.53 |
| 741 | 0.75 | 0.65 |
| 1000 | 0.89 | 0.77 |

| AIR PERMEABILITY | | |
|------------------|---|---|
| AP | m ³ / m ² h pitch 1000 | m ³ / m ² h pitch 1150 |
| 50 | 0.00 | 0.00 |
| 67 | 0.02 | 0.02 |
| 91 | 0.06 | 0.05 |
| 122 | 0.09 | 0.08 |
| 165 | 0.15 | 0.13 |
| 223 | 0.22 | 0.19 |
| 301 | 0.35 | 0.30 |
| 407 | 0.48 | 0.42 |
| 549 | 0.60 | 0.52 |
| 741 | 0.72 | 0.63 |
| 1000 | 0.85 | 0.74 |

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 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 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.

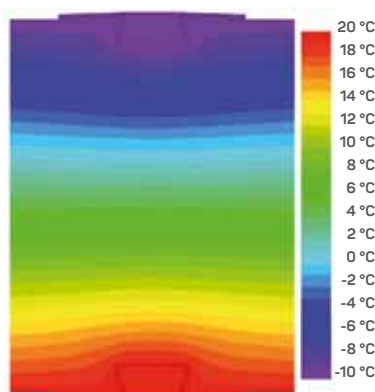
**Average Joint Thermal Transmittance [Thickness 200 mm]:
Uf = 0.145 W/m²K**

| AIR PERMEABILITY | | |
|------------------|---|---|
| AP | m ³ / m ² h pitch 1000 | m ³ / m ² h pitch 1150 |
| 50 | 0.00 | 0.00 |
| 67 | 0.00 | 0.00 |
| 91 | 0.00 | 0.00 |
| 122 | 0.01 | 0.01 |
| 165 | 0.02 | 0.02 |
| 223 | 0.05 | 0.04 |
| 301 | 0.06 | 0.05 |
| 407 | 0.14 | 0.12 |
| 549 | 0.21 | 0.18 |
| 741 | 0.29 | 0.25 |
| 1000 | 0.37 | 0.32 |

| AIR PERMEABILITY | | |
|------------------|---|---|
| AP | m ³ / m ² h pitch 1000 | m ³ / m ² h pitch 1150 |
| 50 | 0.00 | 0.00 |
| 67 | 0.00 | 0.00 |
| 91 | 0.00 | 0.00 |
| 122 | 0.00 | 0.00 |
| 165 | 0.00 | 0.01 |
| 223 | 0.02 | 0.02 |
| 301 | 0.05 | 0.04 |
| 407 | 0.06 | 0.05 |
| 549 | 0.10 | 0.05 |
| 741 | 0.17 | 0.15 |
| 1000 | 0.29 | 0.25 |

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.

**Average Joint Thermal Transmittance [Thickness 200 mm]:
Uf = 0.140 W/m²K**



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.

**Average Joint Thermal Transmittance [Thickness 200 mm]:
Uf = 0.119 W/m²K**

INSULATION

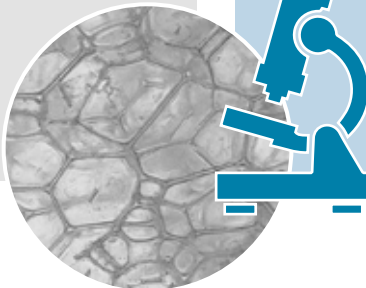
The insulating core of Isopan panels consists of a layer of polyurethane foam with a variable thickness, capable of providing high thermal performance. Production technologies enable to use different types of foams, depending on the technical and performance requirements of each application.

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 ² K/W | 3.70 | 4.55 | 5.56 | 6.67 | 8.33 | 9.09 |
| m ² h °C/kcal | 4.35 | 5.26 | 6.25 | 7.69 | 9.09 | 11.11 |

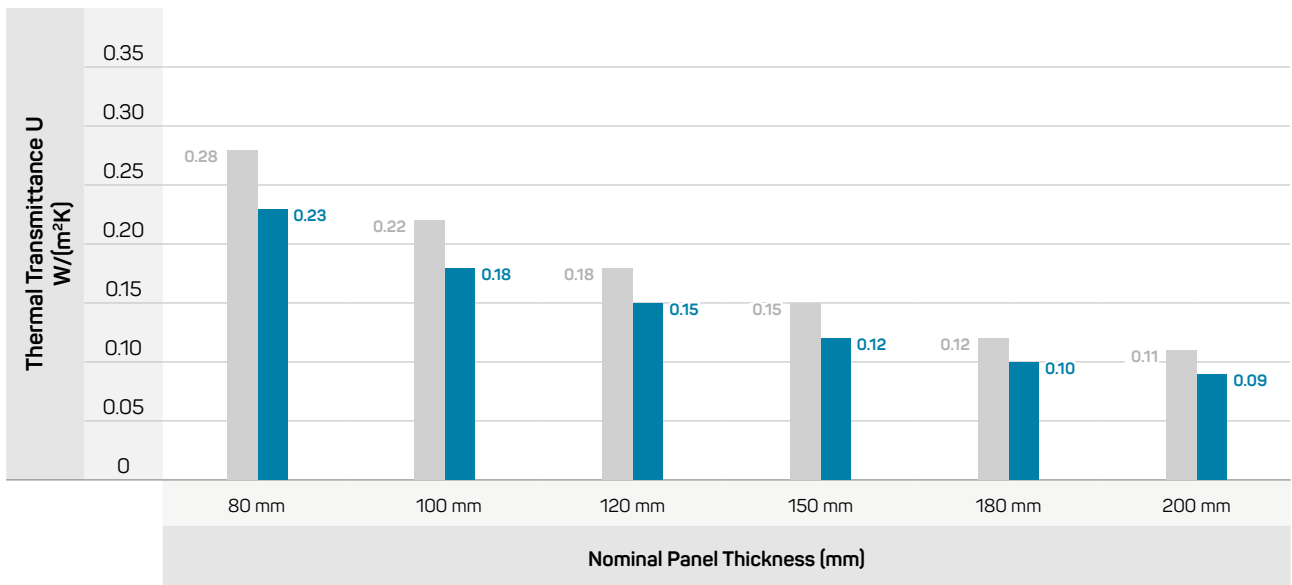
| R | NOMINAL PANEL THICKNESS mm | | | | | |
|--------------------------|----------------------------|------|------|------|-------|-------|
| | 80 | 100 | 120 | 150 | 180 | 200 |
| m ² K/W | 4.35 | 5.55 | 6.67 | 8.33 | 10.00 | 11.11 |
| m ² h °C/kcal | 5.26 | 6.66 | 7.69 | 8.33 | 12.5 | 14.28 |

THERMAL TRANSMITTANCE

According to the new standard EN 14509 A.10

| U | NOMINAL PANEL THICKNESS mm | | | | | |
|--------------------------|----------------------------|------|------|------|------|------|
| | 80 | 100 | 120 | 150 | 180 | 200 |
| W/m ² K | 0.27 | 0.22 | 0.18 | 0.15 | 0.12 | 0.11 |
| kcal/m ² 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 ² K | 0.23 | 0.18 | 0.15 | 0.12 | 0.10 | 0.09 |
| kcal/m ² 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.

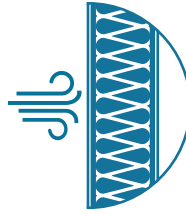
WATER PERMEABILITY

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.



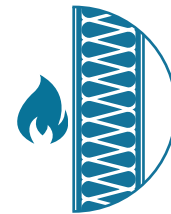
AIR PERMEABILITY

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).



SUSTAINABILITY

Through the EPAQ association, the EPD (Environmental Product Declaration) certification was obtained thanks to the tests performed by the PE International body on Isopan polyurethane foam and rock wool panels.



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 kg/m ² |  NOMINAL PANEL THICKNESS mm | | | | | |  NOMINAL PANEL THICKNESS mm | | | | | |
| | 80 | 100 | 120 | 150 | 180 | 200 | 80 | 100 | 120 | 150 | 180 | 200 |
| | MAXIMUM SPAN cm | | | | | | MAXIMUM SPAN cm | | | | | |
| 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 kg/m ² |  NOMINAL PANEL THICKNESS mm | | | | | |  NOMINAL PANEL THICKNESS mm | | | | | |
| | 80 | 100 | 120 | 150 | 180 | 200 | 80 | 100 | 120 | 150 | 180 | 200 |
| | MAXIMUM SPAN cm | | | | | | MAXIMUM SPAN cm | | | | | |
| 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.



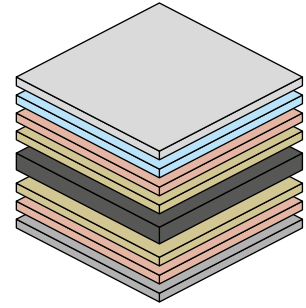
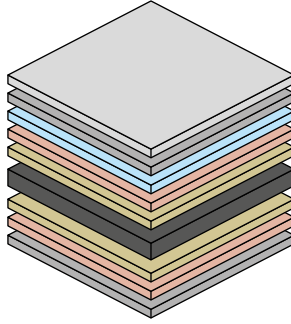
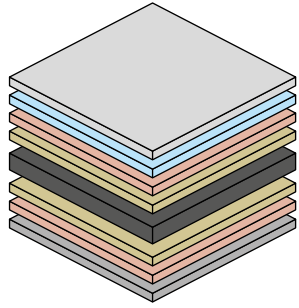
Some treatments of metal surfaces may be applied after installation of the panels on site or to installations already operational and meet all requirements in terms of managing antibacterial effectiveness and hygiene. These systems are ideal for eliminating all pathogens. The technology has antimicrobial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

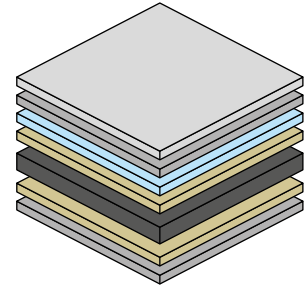
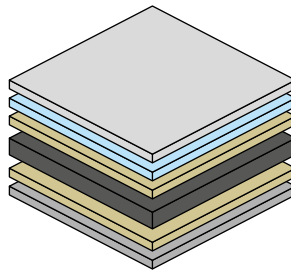
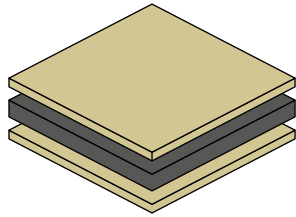
LAMINATES ON GALVANISED STEEL BASE






| | POLYESTER (PE) STANDARD | PET ON BASE PRE-PAINTED STEEL | GALVANISED STEEL ANTIBACTERIAL |
|-------------------------|---|--|---|
| 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.</p> <p>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.

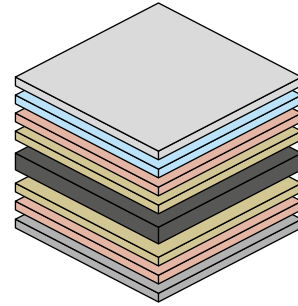
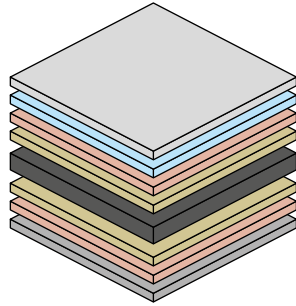
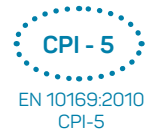
LAMINATES ON STAINLESS STEEL BASE





| | 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

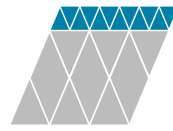


| | TOP CLASS | TOP CLASS PLUS |
|-------------------------|--|--|
| Composition | PVC Film | PVC Film |
| Applications | Perimeter walls (internal side), partitions and false ceilings | Perimeter walls (internal side), partitions and false ceilings |
| Substrate | Hot-dip galvanised steel, S250 GD | 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.



ACCESSORIES AND SOLUTIONS



29

CHANNELS

33

ANCHORING

37

BASE REFRIGERATOR

41

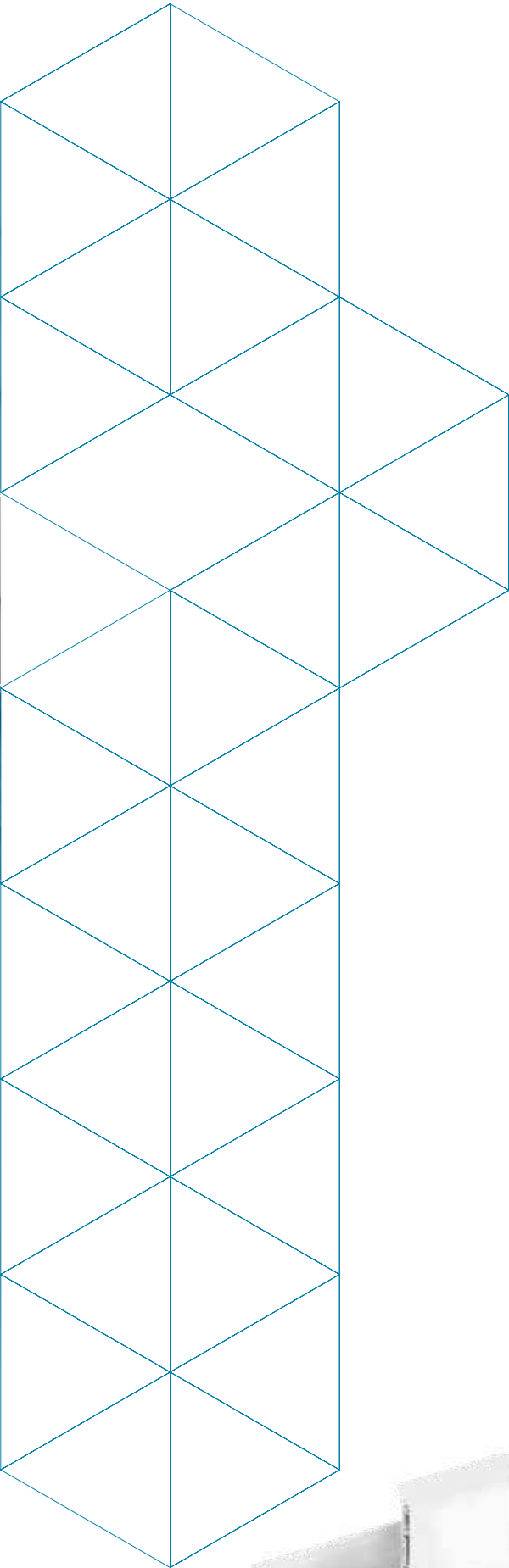
PLUS REFRIGERATOR



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

CHANNELS

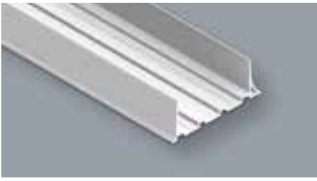
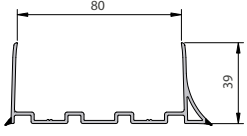




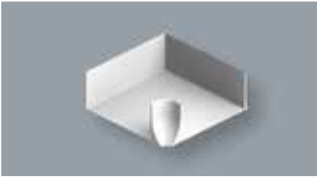
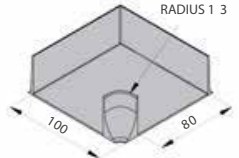
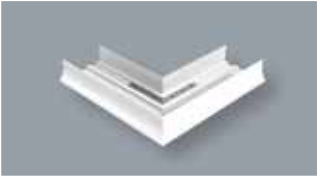
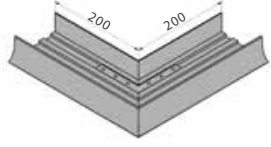

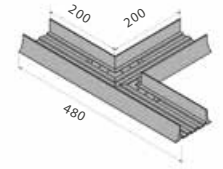
ELEMENTS FOR CONNECTION BETWEEN
PANEL AND FLOOR



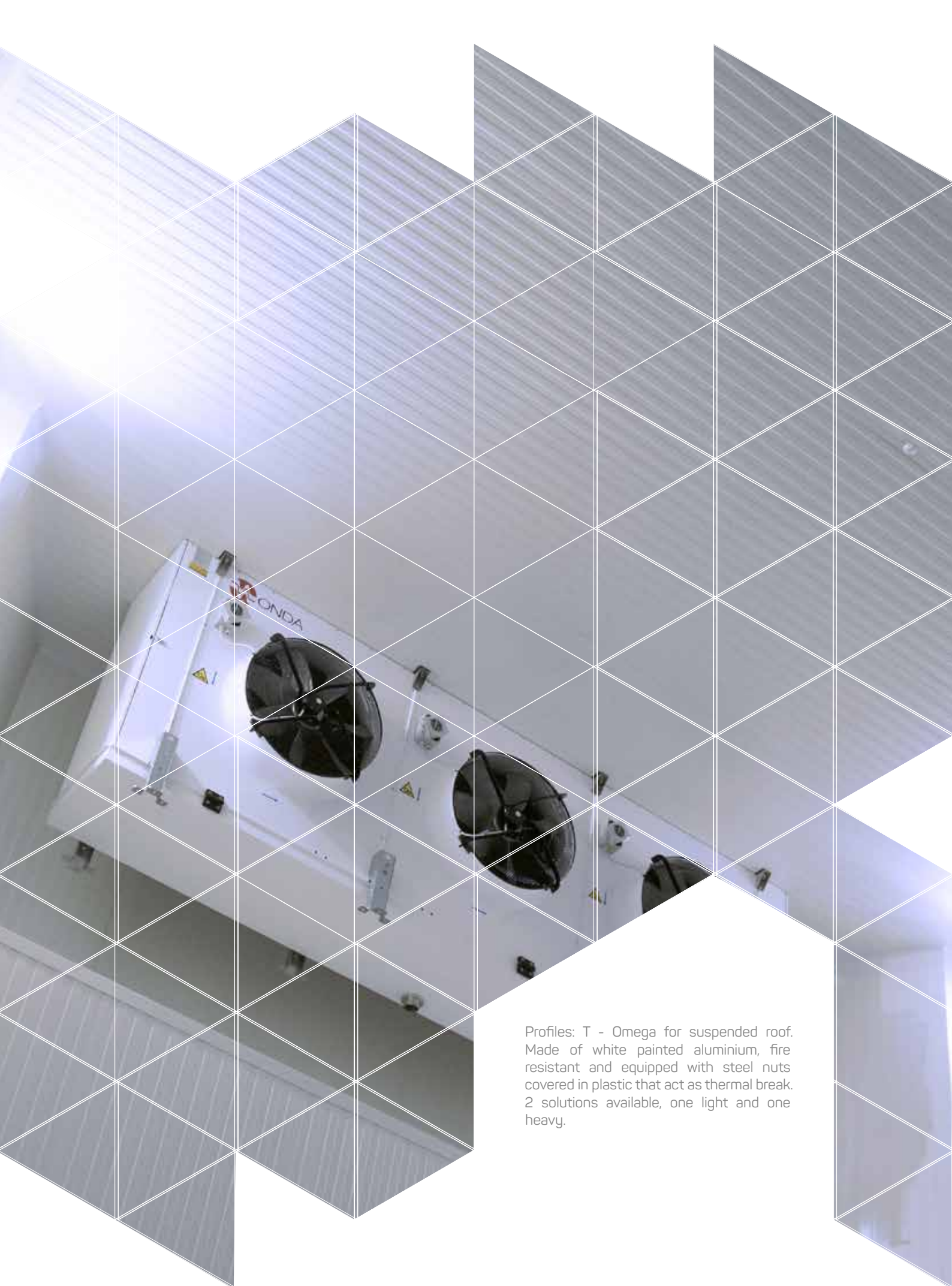
CHANNELS

Elements for connection between panel and floor

| | | | |
|---|------------------|--|---|
|  | ISO H 60 | Length: 4000 mm Packaging: 2 pcs / box Colour: E F |  |
|  | ISO H 70 | Length: 4000 mm Packaging: 2 pcs / box Colour: E F |  |
|  | ISO H 80 | Length: 4000 mm Packaging: 2 pcs / box Colour: E F |  |
|  | ISO H 100 | Length: 4000 mm Packaging: 2 pcs / box Colour: E F |  |
|  | ISO H 120 | Length: 4000 mm Packaging: 8 pcs / box Colour: E F |  |
|  | ISO C 40 | Length: 4000 mm Packaging: 8 pcs / box Colour: E F |  |
|  | ISO C 60 | Length: 4000 mm Packaging: 2 pcs / box Colour: E F |  |
|  | ISO C 80 | Length: 4000 mm Packaging: 2 pcs / box Colour: E F |  |
|  | ISO C 100 | Length: 4000 mm Packaging: 2 pcs / box Colour: E F |  |

| | | | |
|---|--|---|---|
|  | ISO L 80 | Length: 4000 mm Packaging: 8 pcs / box Colour: E F |  |
|  | ISO HA 80 ISO HA 100 | Packaging: 24 pcs / box Packaging: 48 pcs / box Colour: E F |  |
|  | ISO HA 60 R15 ISO HA 80 R15 ISO HA 100 R15 | Packaging: 24 pcs / box Packaging: 48 pcs / box Colour: E F |  |
|  | ISO L 80 R13 + L80 | Packaging: 24 pcs / box Packaging: 48 pcs / box Colour: E F |  |
|  | ISO HL 60 ISO HL 70 ISO HL 120 | Packaging: to be defined Colour: E F |  |
|  | ISO HT 60 ISO HT 70 ISO HT 80 ISO HT 100 ISO HT 120 | Packaging: to be defined Colour: E F |  |

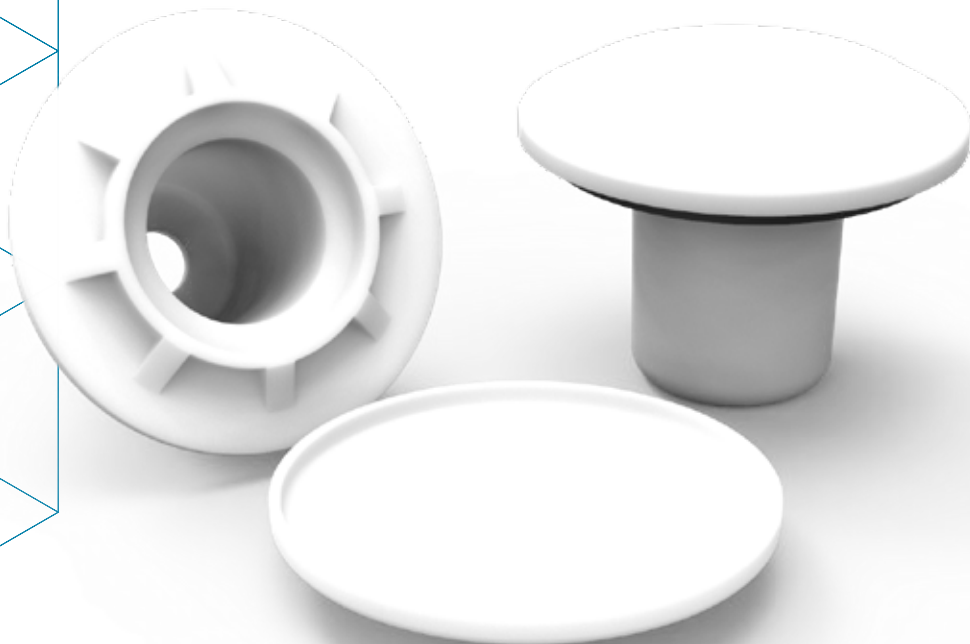
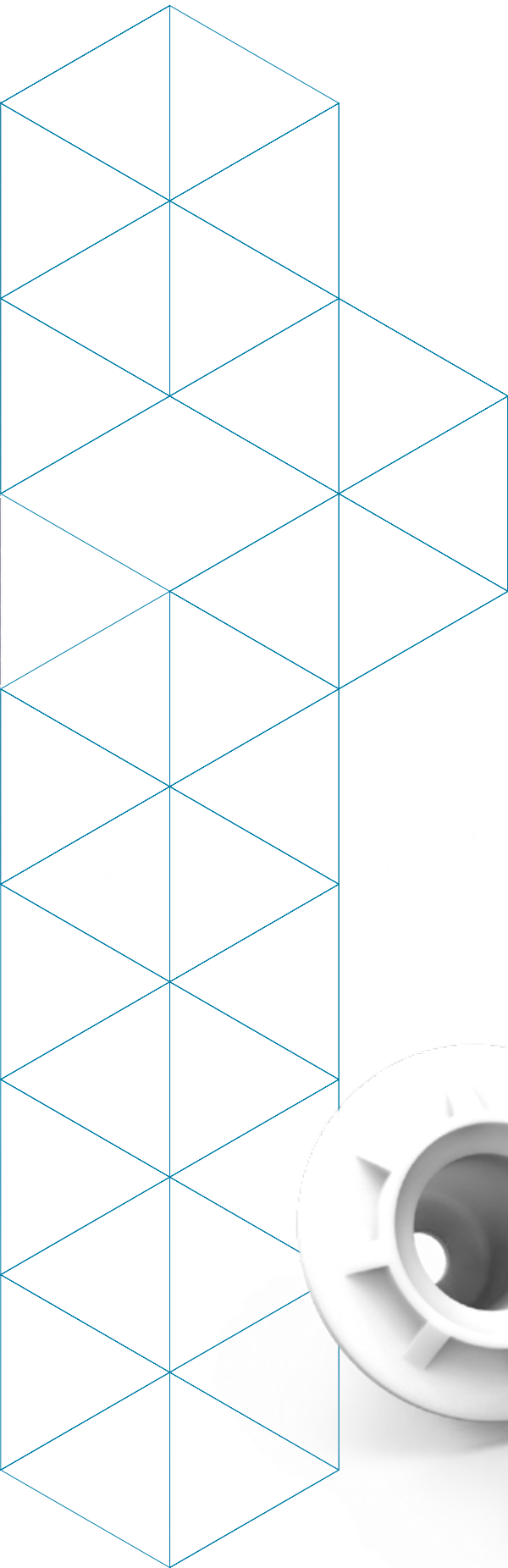




Profiles: T - Omega for suspended roof. Made of white painted aluminium, fire resistant and equipped with steel nuts covered in plastic that act as thermal break. 2 solutions available, one light and one heavy.


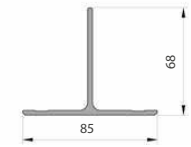

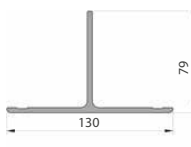

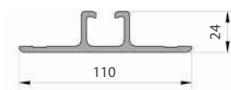



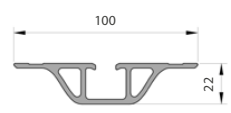
ANCHORING



FALSE CEILING SYSTEMS
AND FIXING ACCESSORIES



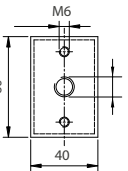

ANCHORING

False ceiling systems and fixing accessories


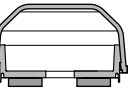
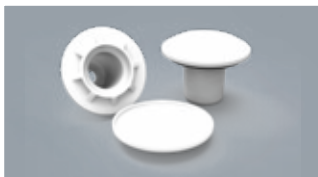
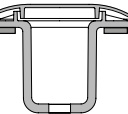
| | | | |
|---|--------------------------|--|---|
|  | ISO T 85 | Length: 4000 mm Packaging: 2 pcs / box Colour: E F |  |
|  | ISO T 130 | Length: 4000 mm Packaging: 2 pcs / box Colour: E F |  |
| Supports Distance | Moment of Inertia | Permitted Bending [L/200] | q |
| m | mm⁴ | mm | Kg/m |
| ISO T 130 | | | |
| 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 |
|  | ISO ME 110 | Length: 4000 mm Packaging: 5 pcs / box Colour: E F |  |
|  | ISO ME 150 | Length: 4000 mm Packaging: 2 pcs / box Colour: E F |  |
| Supports Distance | Moment of Inertia | Permitted Bending [L/200] | q |
| m | mm⁴ | mm | Kg/m |
| ISO ME 110 | | | |
| 0,5 | 24230 | 2,5 | 355 |
| 1 | 24230 | 5 | 66 |
| 1,5 | 24230 | 7,5 | 20 |
| ISO ME 150 | | | |
| 0,5 | 49726 | 2,5 | 656 |
| 1 | 49726 | 5 | 136 |
| 1,5 | 49726 | 7,5 | 40 |
| 2 | 49726 | 10 | 17 |
|  | ISO BES 100 | Length: 4000 mm Packaging: 5 pcs / box Colour: E F |  |

| | | | |
|---|--------------------|--|---|
|  | ISO BES 130 | Length: 4000 mm Packaging: 3 pcs / box Colour: E F |  |
|---|--------------------|--|---|

| Supports Distance m | Moment of Inertia mm ⁴ | Permitted Bending [L/200] mm | q Kg/m |
|------------------------|--------------------------------------|---------------------------------|-----------|
| ISO BES 100 | | | |
| 0,5 | 31359 | 2,5 | 457 |
| 1 | 31359 | 5 | 86 |
| 1,5 | 31359 | 7,5 | 25 |
| 2 | 31359 | 10 | 11 |
| ISO BES 130 | | | |
| 0,5 | 69075 | 2,5 | 996 |
| 1 | 69075 | 5 | 189 |
| 1,5 | 69075 | 7,5 | 56 |
| 2 | 69075 | 10 | 24 |

| | | | |
|---|--|---|---|
|  | ISO ME S | Packaging: 25 pcs / box Colour: E |  |
|  | ISO ME L | Packaging: 50 pcs / box Colour: E |  |
|  | ISO SJ8 ISO SJ10 ISO SJ12 | Packaging: 50 pcs / box Material Metal |  |

ANCHORING

| | | | |
|---|-----------------------------|---|---|
|  | ISO WLR ISO WLRX | Packaging: 100 pcs / box Colour: E F |  |
|  | ISO WLAX | Packaging: 100 pcs / box Colour: E F |  |



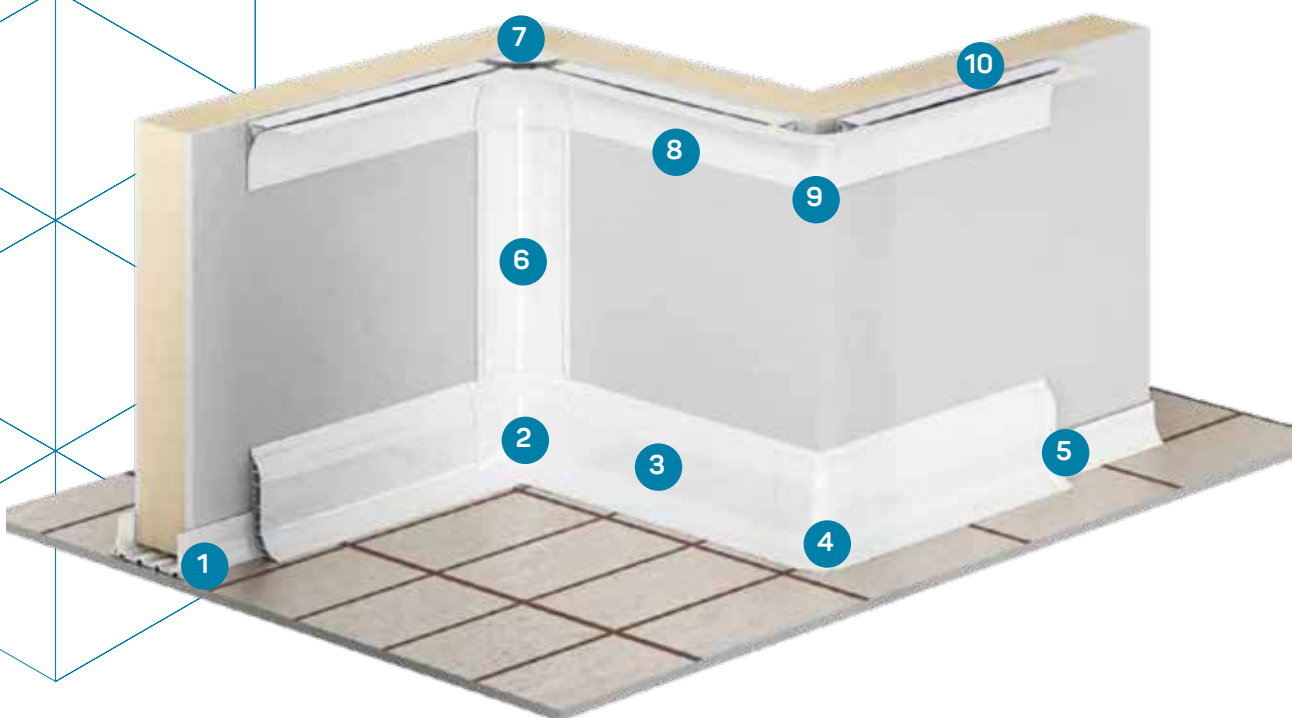
Classic hygienic corner with aluminium or PVC support. Fitted with soft flaps to ensure fixing to the walls and prevent the passage of dirt. Perfect combination with the floor skirting.

FRIGO BASE

CONNECTIONS FOR INTERNAL PARTITIONS
AND COLD ROOMS

KEY

1. ISO H
2. ISO CU 1 S
3. ISO BS 100
4. ISO CU 1 S
5. ISO BS 100 TS-D
6. ISO AO 100
7. ISO CA 65 - 100
8. ISO AO 100
9. ISO AO CR 65 - 100
10. ISO AO - PP 30



BASE REFRIGERATOR

Connections for internal partitions and cold rooms

| | | | |
|---|--|--|---|
|  | ISO AS 45 | Length: 4000 mm Packaging: 50 pcs / box Colour: E F |  |
|  | ISO AS P 45 | Length: 4000 mm Packaging: 50 pcs / box Colour: E F |  |
|  | ISO AO 65 | Length: 4000 mm Packaging: 25 pcs / box Colour: E F |  |
|  | ISO AO 100 | Length: 4000 mm Packaging: 25 pcs / box Colour: E F |  |
|  | ISO AO - PA 30 ISO AO - PP 30 with holes | Length: 4000 mm Packaging: 25 pcs / box Material: PP - plastic PA - aluminium |  |
|  | ISO AO - PA 40 ISO AO - PP 40 with holes | Length: 4000 mm Packaging: 25 pcs / box Material: PP - plastic PA - aluminium |  |
|  | ISO C 100 | Length: 4000 mm Packaging: 10 pcs / box Colour: E F B |  |
|  | ISO C P 100 | Length: 4000 mm Packaging: 10 pcs / box Material: Plastic |  |
|  | ISO C PT 100 | Packaging: 10 pcs / box Colour: E F B |  |

| | | | |
|---|--|---|---|
|  | ISO BS 100 | Length: 4000 mm Packaging: 10 pcs / box Colour: E F |  |
|  | ISO CA 45 + TM5 | Packaging: 100 pcs / box Colour: E |  |
|  | ISO CA 65 ISO CA 100 | Packaging: 100 pcs / box Colour: E F |  |
|  | ISO AO CR 65 ISO AO CR 100 | Packaging: 100 pcs / box Colour: E F |  |
|  | ISO AO TL 65 ISO AO TL 100 | Packaging: 100 pcs / box Colour: E F |  |
|  | ISO CU 1 S ISO CU 2 S | Packaging: 50 pcs / box Colour: E F |  |
|  | ISO CC 100 + TH | Packaging: to be defined Colour: E F |  |
|  | ISO CA 100 S | Packaging: 50 pcs / box Colour: E F |  |
|  | ISO BS 100 ST ISO BS 100 DT | Packaging: 100 pcs / box Colour: E F |  |



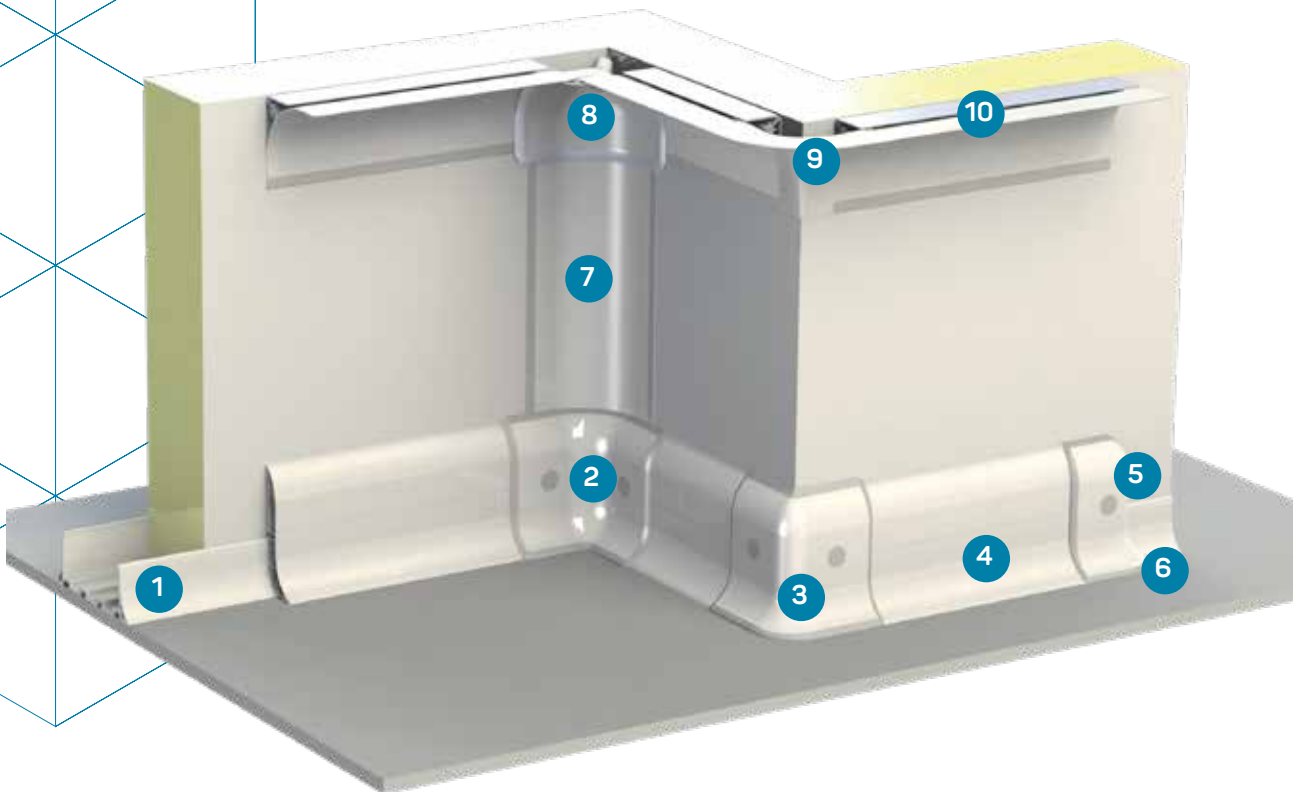
New hygienic profile system with a skirting board fitted with a large door to make installation easier.
Complete with two-material caps for an airtight seal.
Excellent water and dirt sealing.

FRIGO PLUS

HIGH QUALITY CONNECTIONS FOR COLD ROOMS
AND PROCESSING CHAMBERS

KEY


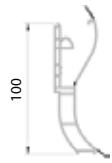

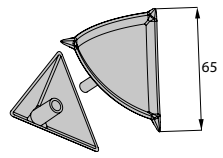

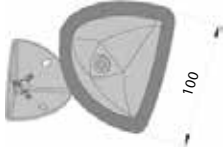

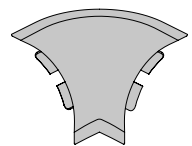



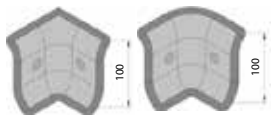

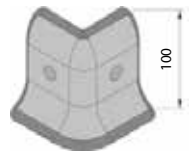




1. ISO H
2. ISO CU 100-2 + TH
3. ISO CA 100 H + TH
4. ISO BH 100
5. TH
6. ISO CA 100 H D + TH
7. ISO AO 100
8. ISO CA 100 H + TH
9. ISO AO CR 65
10. ISO AO PP-PA 30-40



PLUS REFRIGERATOR

High quality connections for cold rooms and processing chambers

| | | | |
|---|--|--|---|
|  | ISO AS 65 | Length: 4000 mm Packaging: 25 pcs / box Colour: E F |  |
|  | ISO AS - PA ISO AS - PP with holes | Length: 4000 mm Packaging: 25 pcs / box Material: PP plastic PA aluminium |  |
|  | ISO AO 65 | Length: 4000 mm Packaging: 25 pcs / box Colour: E F |  |
|  | ISO AO 100 | Length: 4000 mm Packaging: 25 pcs / box Colour: E F |  |
|  | ISO AO - PA 30 ISO AO - PP 30 with holes | Length: 4000 mm Packaging: 25 pcs / box Material: PP plastic PA aluminium |  |
|  | ISO AO - PA 40 ISO AO - PP 40 with holes | Length: 4000 mm Packaging: 25 pcs / box Material: PP plastic PA aluminium |  |
|  | ISO C 100 | Length: 4000 mm Packaging: 10 pcs / box Colour: E F B |  |
|  | ISO C P 100 | Length: 4000 mm Packaging: 10 pcs / box Material: Plastic |  |
|  | ISO C PT 100 | Packaging: 10 pcs / box Colour: E F B |  |

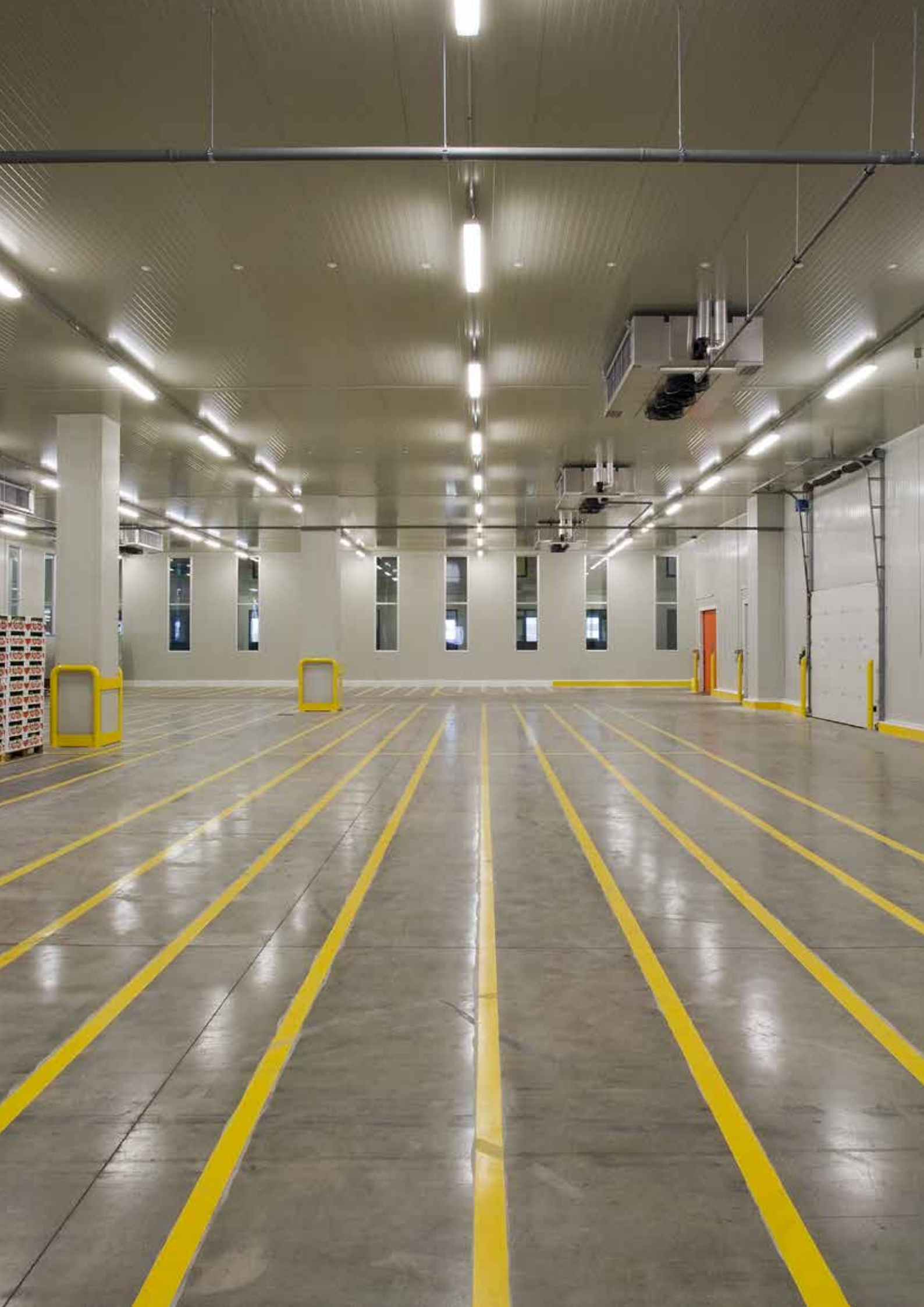
| | | | |
|---|--|---|---|
|  | ISO BH 100 | Length: 4000 mm Packaging: 10 pcs / box Colour: E F |  |
|  | ISO CA 65 | Packaging: 100 pcs / box Colour: E F B |  |
|  | ISO CA 100 H + TH | Packaging: 100 pcs / box Colour: E F |  |
|  | ISO AO CR 65 ISO AO CR 100 | Packaging: 100 pcs / box Colour: E F |  |
|  | ISO AO TL 65 ISO AO TL 100 | Packaging: 100 pcs / box Colour: E F |  |
|  | ISO CU 100-1 + TH ISO CU 100-2 + TH | Packaging: 50 pcs / box Colour: E F |  |
|  | ISO CA 100 H + TH | Packaging: 50 pcs / box Colour: E F |  |
|  | ISO CA 100 H D + TH ISO CA 100 H S + TH | Packaging: 100 pcs / box Colour: E F |  |
|  | ISO CC 100 + TH | Packaging: to be defined Colour: E F |  |

















THE GROUP NUMBERS

“Transitioning towards a sustainable economy in the industrial era 4-0 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

more than

10.200

Investments 2018

12,3 millions

Turnover in Euro

630,4 millions

Employees

1.127

Tons/year of CO_{2eq} avoided

more than

32 Thousand

Result of Manni Energy 2018 activity

Square metres/year of panels sold

approximately

15 millions

Tons/year of steel purchased

approximately

450 Thousand



MANNI GROUP

Headquarters
Verona office

STEEL

- MANNI SIPRE
 Mozzecane (VR)
 Div. 1: sheet metals
 Div. 2: laminates and pipes
 Div. 7: beams
- MANNI INOX
 Verona
 Div. Via Righi
 Div. Via Torricelli
- MANNI GREEN
 TECH
 Verona
 Houston, (TX)
 Manni Green Tech
 USA
- Crema (CR)
 Div. 8: beams
 Div. 9: commercial
- Monteprendone (AP)
 Div. 6: beams
- Campoformido (UD)
 Div. 3: beams

RENEWABLE ENERGIES AND SERVICES

- MANNI ENERGY
 Verona
- MANNI IMMOBILIA
 Verona
- MANNI STORE
 Turin
- ICOM ENGINEERING
 Verona

PANELS

- ISOPAN
 Div. Trevenzuolo
 (VR) Isopan Spa
 Volgograd, Russia
 Isopan Rus
- Div. Patrica (FR)
 Isopan Spa
 Guanajuato,
 Mexico Isocindu
- Tarragona, Spain
 Isopan Ibérica
 Paris, France
 Isopan France
- Bucarest, Romania
 Isopan Est
 Praga, Czech Republic
 Isopan Manni
 Group Cz
- Plötz-Halle, Germany
 Isopan Deutschland

- Office
- Business location

- B.U. Steel
- B.U. Isolating panels

ISOPAN WORLDWIDE



Manni Group HP - Verona (Italy)



Isopan Spa - Frosinone (Italy)



Isopan Spa - Verona (Italy)



Isopan Iberica - Tarragona (Spain)



Isopan Est - Popești Leordeni (Romania)



Isopan Deutschland - Plötz (Germany)



Isocindu - Guanajuato (Mexico)



Isopan Rus - Volgograd (Russia)

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