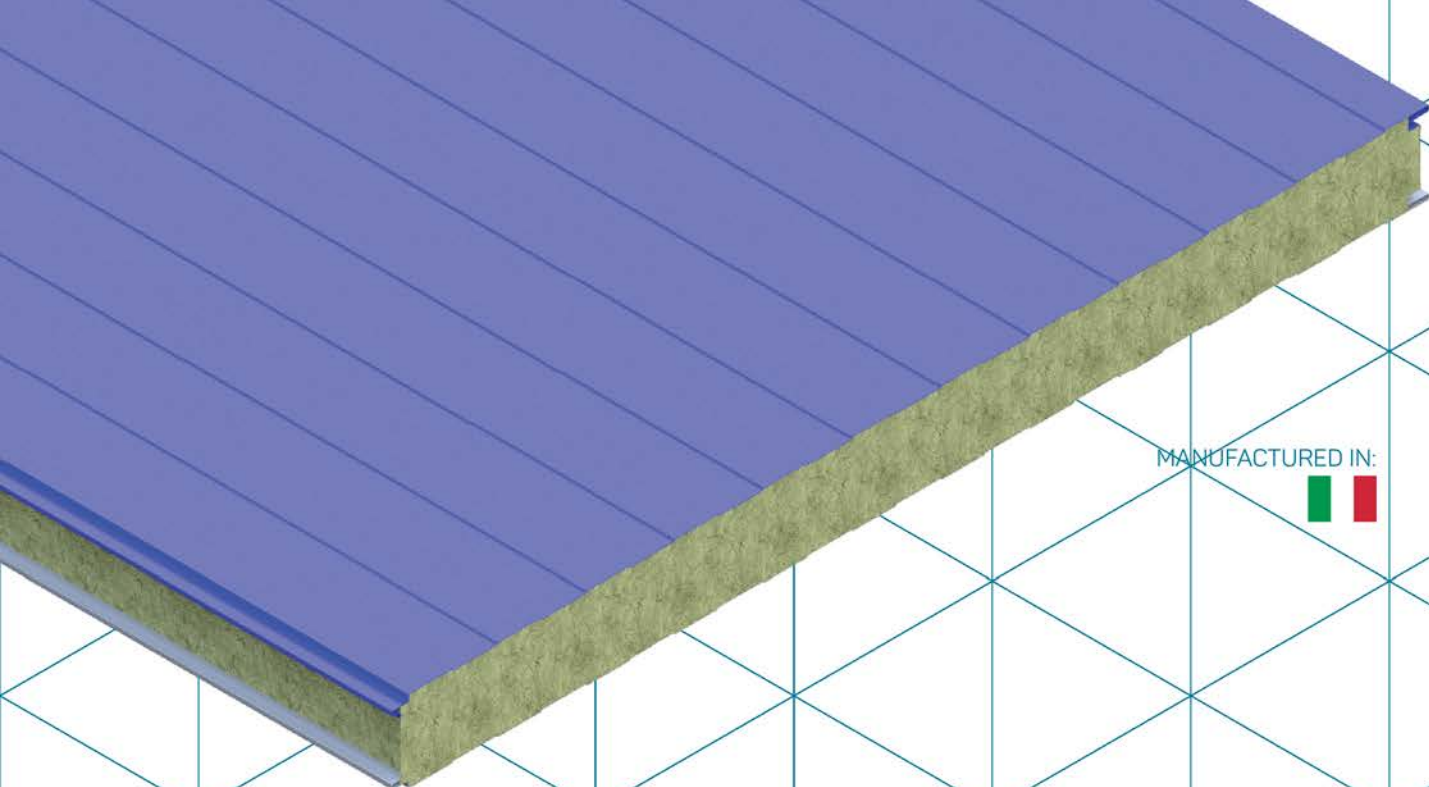




MANUFACTURED IN:



TECHNICAL MANUAL

ISOFIRE WALL Range

ISOFIRE WALL | ISOFIRE WALL FONO

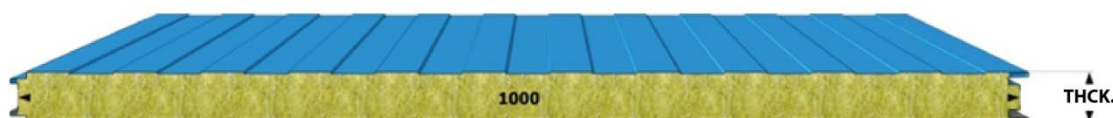
TABLE OF CONTENTS

ISOFIRE WALL range.....	4
<i>Types of panels.....</i>	<i>4</i>
<i>Geometric features.....</i>	<i>4</i>
<i>Metal facings</i>	<i>4</i>
<i>Protection of the pre-painted faces</i>	<i>5</i>
<i>Features of the internal faces.....</i>	<i>5</i>
<i>Insulation.....</i>	<i>5</i>
<i>Soundproofing.....</i>	<i>6</i>
<i>Sound absorption (Isofire WALL fono).....</i>	<i>6</i>
<i>Static features</i>	<i>6</i>
<i>Joint</i>	<i>11</i>
<i>Tolerances (annex D EN 14509)</i>	<i>11</i>
<i>Fire resistance</i>	<i>12</i>
<i>Reaction to fire (EN 13501-1).....</i>	<i>12</i>
<i>Restrictions of use</i>	<i>13</i>
<i>General design instructions.....</i>	<i>13</i>
<i>Design for fire critical conditions.....</i>	<i>13</i>
<i>Thermal expansions.....</i>	<i>14</i>
<i>Fastening instructions</i>	<i>16</i>
<i>Assembly instructions</i>	<i>18</i>
<i>Package composition</i>	<i>19</i>
<i>Transport and storage.....</i>	<i>19</i>
<i>Packaging.....</i>	<i>20</i>
<i>Durability</i>	<i>21</i>
<i>Maintenance.....</i>	<i>21</i>
<i>Safety and disposal.....</i>	<i>21</i>
Annex A.....	22
Annex B.....	24
<i>Suction cup lifters.....</i>	<i>24</i>
Annex C.....	29
<i>Building details</i>	<i>29</i>

ISOFIRE WALL Range

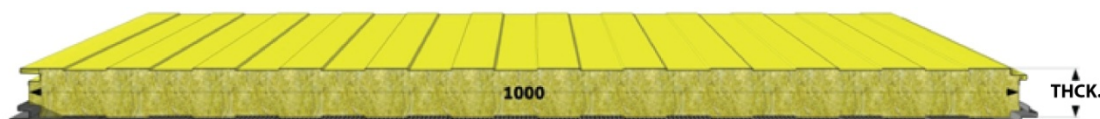
TYPES OF PANELS

ISOFIRE WALL



Double skin sandwich panel for walls with mineral wool insulating core that assures the product's incombustibility in addition to assuring adequate thermal insulation. It was developed to meet growing performance needs and legislative constraints on fire behaviour for buildings, keeping high mechanical and insulation characteristics. Used for wall cladding of industrial and residential buildings.

ISOFIRE WALL Fono



Double skin sandwich panel for walls with mineral wool insulating core that assures adequate thermal insulation. Solution with internal face in micro-perforated sheet able to increase the panel's sound absorption performance.

GEOMETRIC FEATURES

	ISOFIRE WALL	ISOFIRE WALL FONO
Length	Up to maximum transportable	
Useful Pitch (mm)	1000	
Insulating Thickness (mm)	50, 60, 80, 100, 120, 150, 170, 200	50, 60, 80, 100, 120, 150
External face	Micro-ridged lightly profiled metal sheet	
Internal face	Micro-ridged lightly profiled metal sheet	perforated metal sheet (diameter 3 mm, pitch 5 mm) micro-ridged

METAL FACINGS

- SENDZIMIR system hot dip galvanised steel by continuous process (UNI EN 10346) and pre-painted by means of a coil coating continuous process with different painting cycles based on end use (see: "Guide to Choosing Pre-painted").
- 3000 or 5000 series aluminium alloys with pre-painted finish with the cycles mentioned in the previous point, with a natural or embossed effect.
- Stainless steel AISI 304, 2B finish, according to EN 10088-1.
- In case of aluminium facings, these must be preferably applied on both sides: in fact, if different materials are used on the two sides, the panel may distort and bend due to the different thermal expansion coefficients of the faces.
- For stainless steel facings, one should take into account the possible appearance of flaws that are highlighted by such reflecting surfaces.

PROTECTION OF THE PRE-PAINTED FACES

All pre-painted metal facings are supplied with an adhesive polyethylene protective film that prevents damage to the paint layer. If the material is specifically requested without protective film, Isopan assumes no liability in case of damages to the paint. The protective film that covers the pre-painted panels must be completely removed during assembly and, in any case, within sixty days after the material preparation.

It is also recommended not to expose the panels covered by a protective film to direct sunlight.

FEATURES OF THE INTERNAL FACES

Perforated metal sheet (Isofire wall fono)

A layer of dustproof black glass fibres is placed between the perforated internal face and insulating core package to protect the inner side.

INSULATION

Made with rock wool with oriented fibres, having the following physical and mechanical features:

- Incombustibility Class A1 according to standard EN 13501
- Melting temperature > 1000 °C
- Absence of fumes during insulating material combustion
- Resistance to water/vapour penetration $\mu = 1.4$
- Water absorption $W_p < 3 \text{ kg/m}^2$
- Specific thermal capacity $c_p = 840 \text{ J/kgK}$
- Durability: class DUR2 according to standard EN 14509
- Thermal conductivity coefficient $\lambda = 0.04 \text{ W/mK}$
- Compressive strength $\geq 0.06 \text{ MPa}$ (at 10% of deformation)
- Tensile strength $\geq 0.04 \text{ MPa}$
- Shear strength $\geq 0.05 \text{ MPa}$

Thermal transmittance coefficient U^*

Panel thickness (mm)	50	60	80	100	120	150	170	200
U [W/m²K]	0.75	0.63	0.49	0.39	0.33	0.27	0.24	0.20

* Mandatory for CE marking of double skin metal faced sandwich panels according to EN 14509.

Thermal resistance coefficient R

Panel thickness (mm)	50	60	80	100	120	150	170	200
R [m²K/W]	1.33	1.59	2.04	2.56	3.03	3.70	4.17	5.00

SOUNDPROOFING

It is the ability of a system to acoustically insulate a room from sounds from the outside and vice versa.

The tested ISOFIRE WALL steel panels obtained the following results:

Panel thickness (mm)	Rw (dB)
80	30

The tested ISOFIRE WALL FONO steel panels obtained the following results:

Panel thickness (mm)	Rw (dB)
50	34
80	35
100	35

SOUND ABSORPTION (ISOFIRE WALL FONO)

The smooth and hard surfaces have the property of reflecting sound, this means that the sound produced by sources inside these environments can be greatly amplified. This phenomenon is called reverberation. The particular ability of a material to absorb sound can be used to reduce reverberation and reflected noise within the environments. The tested steel ISOFIRE WALL FONO panels obtained acoustic absorption coefficient **alpha = 1 (CLASS A)**.

STATIC FEATURES

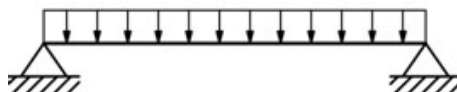
The resistance values refer to a panel assembled horizontally and subject to the action of a distributed load that simulates the action of wind pressure; the calculation method used by ISOPAN does not consider the thermal effects, which are verified by the designer. Depending on the weather conditions of the installation location 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, based on their number and the way they are placed.

ISOFIRE WALL

ISOFIRE WALL panels are self-supporting according to the **UNI EN 14509** definition. "...panel capable of supporting, by virtue of its materials and shape, its own weight and in case of panel fastened to spaced structural supports, all applied loads (snow, wind, air pressure), and transmitting these loads to the supports.", depending on the type of metal supports, their thickness and the thickness of the thermal insulating core.

Below are some examples of indicative load bearing tables:

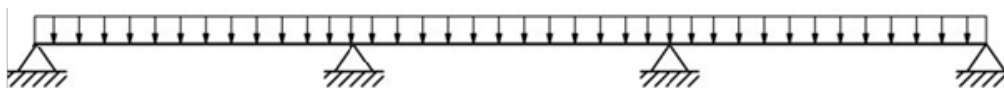
- panel on two supports:



STEEL SHEETS 0.5/0.5 mm - Simple support 120 mm							
UNIFORMLY DISTRIBUTED LOAD [kg/m ²]	NOMINAL PANEL THICKNESS mm						
	50	60	80	100	120	150	200
	MAXIMUM SPAN cm						
50	345	400	475	545	640	665	760
60	315	365	440	495	545	610	690
80	270	315	380	430	470	525	610
100	240	280	345	380	420	470	560
120	215	250	310	350	380	430	515
140	195	230	285	325	355	395	480
160	190	210	270	300	335	375	450
180	175	190	245	285	315	350	410
200	155	185	230	275	295	335	375

STEEL SHEETS 0.6 / 0.6 mm - Simple support 120 mm							
UNIFORMLY DISTRIBUTED LOAD [kg/m ²]	NOMINAL PANEL THICKNESS mm						
	50	60	80	100	120	150	200
	MAXIMUM SPAN cm						
50	365	420	525	590	650	715	780
60	335	380	475	545	590	665	720
80	285	325	410	470	515	580	635
100	250	285	365	380	450	510	595
120	220	260	325	380	420	470	540
140	200	235	325	355	390	440	505
160	190	215	275	330	365	410	485
180	180	195	255	305	345	385	450
200	165	190	235	285	330	370	420

- panel on multiple supports:



STEEL SHEETS 0.5/0.5 mm - Multi-Support 120 mm							
UNIFORMLY DISTRIBUTED LOAD [kg/m ²]	NOMINAL PANEL THICKNESS mm						
	50	60	80	100	120	150	200
	MAXIMUM SPAN cm						
50	400	460	525	555	640	695	775
60	355	420	475	535	570	630	705
80	305	355	410	450	485	535	625
100	270	305	365	400	430	470	560
120	225	275	325	365	390	420	505
140	210	245	300	335	355	380	465
160	190	225	280	305	330	355	435
180	185	205	265	285	305	330	400
200	165	190	245	275	290	310	360

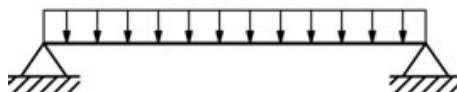
STEEL SHEETS 0.6 / 0.6 mm - Multi-Support 120 mm							
UNIFORMLY DISTRIBUTED LOAD [kg/m ²]	NOMINAL PANEL THICKNESS mm						
	50	60	80	100	120	150	200
	MAXIMUM SPAN cm						
50	420	485	570	640	685	725	795
60	375	440	515	570	620	675	735
80	315	365	440	485	525	570	650
100	270	315	390	430	460	495	595
120	240	280	355	390	410	450	525
140	210	250	325	355	380	410	485
160	190	230	295	330	355	380	465
180	180	205	270	305	330	355	440
200	165	190	250	290	305	330	400

ISOFIRE WALL Fono

ISOFIRE WALL FONO panels are self-supporting according to the **UNI EN 14509** definition. "...panel capable of supporting, by virtue of its materials and shape, its own weight and in case of panel fastened to spaced structural supports, all applied loads (snow, wind, air pressure), and transmitting these loads to the supports.", depending on the type of metal supports, their thickness and the thickness of the thermal insulating core.

Below are some examples of indicative load bearing tables:

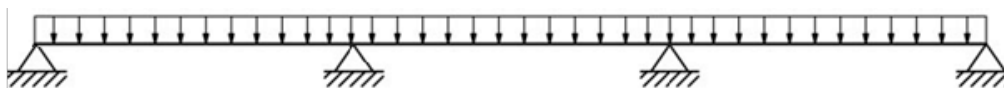
- panel on two supports:



STEEL SHEETS 0.5/0.5 mm - Simple support 120 mm						
UNIFORMLY DISTRIBUTED LOAD [kg/m ²]	NOMINAL PANEL THICKNESS mm					
	50	60	80	100	120	150
	MAXIMUM SPAN cm					
50	290	340	400	460	540	560
60	265	305	370	420	460	515
80	225	265	320	360	395	440
100	200	235	290	320	355	395
120	180	210	260	295	320	360
140	165	195	240	275	300	335
160	160	180	225	255	280	315
180	145	160	205	240	265	295
200	130	155	195	230	250	280

STEEL SHEETS 0.6 / 0.6 mm - Simple support 120 mm						
UNIFORMLY DISTRIBUTED LOAD [kg/m ²]	NOMINAL PANEL THICKNESS mm					
	50	60	80	100	120	150
	MAXIMUM SPAN cm					
50	305	355	440	500	545	600
60	280	320	400	460	500	560
80	240	275	345	395	435	490
100	210	240	305	320	380	430
120	185	220	275	320	355	395
140	170	200	275	300	330	370
160	160	180	230	280	305	345
180	150	165	215	260	290	325
200	140	160	200	240	280	310

- panel on multiple supports:



STEEL SHEETS 0.5/0.5 mm - Multi-Support 120 mm						
UNIFORMLY DISTRIBUTED LOAD [kg/m ²]	NOMINAL PANEL THICKNESS mm					
	50	60	80	100	120	150
	MAXIMUM SPAN cm					
50	340	385	440	465	540	585
60	300	355	400	450	480	530
80	260	300	345	380	410	450
100	225	260	305	340	360	395
120	190	230	275	305	330	355
140	180	205	255	280	300	320
160	160	190	235	260	280	300
180	155	175	220	240	260	280
200	140	160	205	230	245	260

STEEL SHEETS 0.6 / 0.6 mm - Multi-Support 120 mm						
UNIFORMLY DISTRIBUTED LOAD [kg/m ²]	NOMINAL PANEL THICKNESS mm					
	50	60	80	100	120	150
	MAXIMUM SPAN cm					
50	420	525	590	650	715	610
60	380	475	545	590	665	570
80	325	410	470	515	580	480
100	285	365	380	450	510	420
120	260	325	380	420	470	380
140	235	325	355	390	440	345
160	215	275	330	365	410	320
180	195	255	305	345	385	300
200	190	235	285	330	370	280

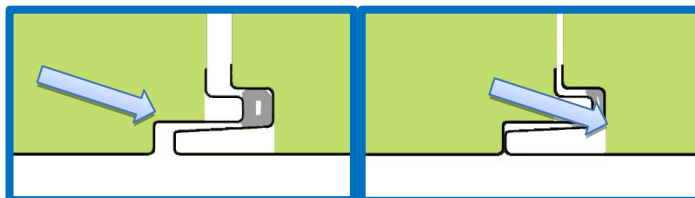
The information contained in the load tables refers to the panel features only.

It cannot replace the design calculations drawn up by a skilled technician, who must validate this information under the laws in force in the place where the panels are installed.

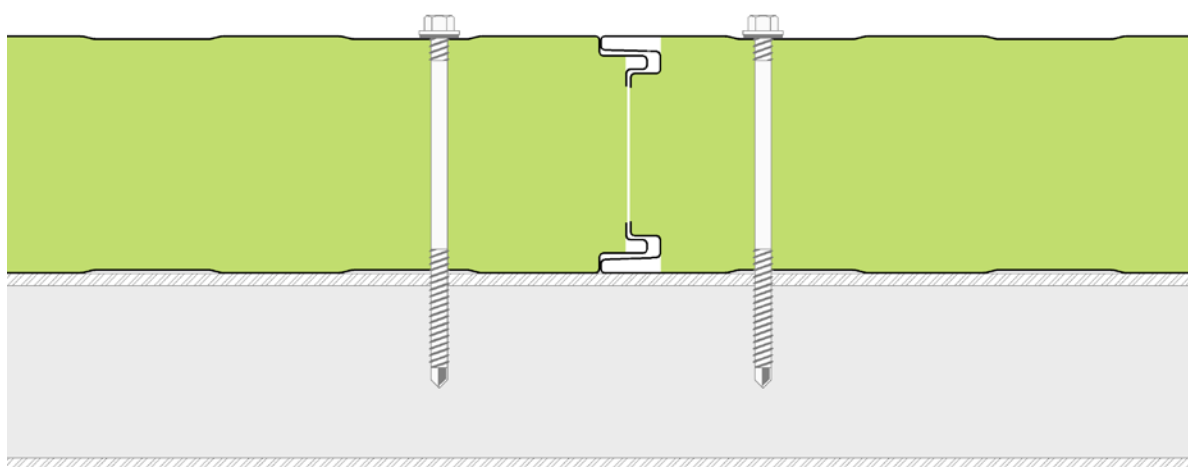
JOINT

The shape of the labyrinth joint is expressly designed to assure product functionality, even at very low temperatures.

For special end-use requirements, an optional gasket can be put in on site to increase the airtightness of the joint.



Gasket crushing, leading to increased seal, due to the side pressure required to assure suitable coupling.



TOLERANCES (ANNEX D EN 14509)

- Facing thickness: according to the reference standards for the products used
- Panel thickness: nominal, ± 2 mm
- Length: if ≤ 3000 mm ± 5 mm; if > 3000 mm ± 10 mm

FIRE RESISTANCE

The concept of fire resistance is defined, within national legislation, as the ability of a construction element, component, or structure, to retain, according to a predetermined temperature programme and for a set time, in whole or in part, the following requirements:

- **The stability or load bearing ability (R):** “ability of a structure or a member thereof to withstand the specific actions during the relevant fire exposure” (Eurocodes);
- ☐ **The seal or integrity (E):** “ability of the separation members to prevent the passage of hot gases or ignition beyond the exposed surface, during the relevant fire exposure” (Eurocodes);
- **Thermal insulation (I):** “ability of a separating member to restrict excessive heat transmission” (Eurocodes).

The tested ISOFIRE WALL steel panels obtained the following results:

Panel thickness (mm)	According to EN 13501-2 (European standard)
50	EI 15 // EI 30*
80	EI 60
100	EI 60 // EI 120*
120	EI 90
150	EI 180

*Performance achievable by applying stitching screws along the joints. For more details see the corresponding Assembly Instructions.

REACTION TO FIRE (EN 13501-1)

The reaction to fire indicates the degree to which a material participates in the fire to which it is subjected.

The European reference standards to classify the reaction to fire of construction material is **EN 13501-1** (Fire classification of construction products and building elements). This standard specifies:

Euroclasses: the standard distinguishes seven classes, with increasing contribution to fire, from A1 (non-combustible product) to F (product not tested/not classified).

Smoke: smoke opacity growth speed:

- **s1** no smoke emission
- **s2** low smoke emission
- **s3** strong smoke emission

Burning droplets: fall of burning particles

- **d0** no burning particles
- **d1** few burning particles
- **d2** many burning droplets

The ISOFIRE WALL panel, in rock wool has been tested for fire reaction in accordance to standard **EN 13501-1** obtaining the classification: **A2 S1 D0**. For further information, please refer to the Isopan catalogue, the website www.isopan.com or contact the Technical Department.

RESTRICTIONS OF USE

- A thermohygrometric check should be performed during the design stage. In certain conditions (e.g. high indoor humidity level) condensation can appear on the internal face of the panel with consequent dripping inside the building. If these conditions persist long enough, they can accelerate the natural degradation of the organic facing and the face itself.
- If an aluminium sheet is used as an external face, it is necessary to consider the possible distortions of the panel (bending) due to the different thermal expansion coefficients.
- **Due to solar radiation, the external face of the panel can reach relatively high temperatures. In some cases, for example, with dark colours, it can reach a temperature of 80÷90°C.** This temperature would bend the panel and wrinkle the sheet. Isopan recommends a minimum thickness of 0.6 mm for the external side face. The occurrence of the problem may be limited with appropriate design, taking into account environmental conditions, length, colour of the panels and thickness of the sheet metal. **(See the "Thermal expansion" section).**
- The perforated face in pre-painted galvanised steel has no protection in the area of the hole, as it is produced by punching. The exposed perforated panel side should be used towards the inside of the building in order to prevent corrosion phenomena.

GENERAL DESIGN INSTRUCTIONS

The wall panels generally require, during the design phase, a structure able to absorb the external loading stress that will not submit the panels to excessive and permanent distortions to the detriment of their basic characteristics. When choosing the panel types during the design phase, you should consider some parameters related to environmental actions like:

- **Wind action:** depends on the climatic area where the building is installed; the values fluctuate based on wind speed, with subsequent greater or lesser load pressure on the exposed surfaces (affects the type and number of panel fastening elements). For this particular panel (with concealed fastening elements), wind action in depression should be considered, bearing on joint resistance and fastening points, and it is required to use the specific Isopan plate on each screw to distribute stress (we recommend consulting with the ISOPAN Technical Department);
- **Thermal stress:** largely depends on the colour of the external surface of the panel and the building exposure, and can create significant system deformations.
- **Atmospheric corrosion:** depends on the environment where the panels are installed (marine, industrial, urban, rural); mainly affects the degree of corrosiveness on the panel surfaces. In this regard, suitable metallic or organic facings should be chosen (refer to the available documentation or contact the Isopan Technical Department).

In order to make up for possible lack of material due to damages during handling and assembly, Isopan recommends procuring spare panels (quantity equal to approximately 5% of the total).

DESIGN FOR FIRE CRITICAL CONDITIONS

The panel may be used for possible fire exposure on both faces only positioned on walls and vertically. Pursuant to the regulations the certified performances refer to and are guaranteed only in conventional test conditions: application of a Standard Fire Curve, as per standard **ISO 834**, implemented in Italy by regulation **UNI EN 1363**, used on small-sized structural elements assembled with the specific joint.

It is the designer's responsibility to justify from an engineering point of view the performance extension at dimensions and under methods other than the laboratory tests, in particular with regards to length and, therefore, the need for intermediate supports, head junction and coupling with other constructive elements, especially structural.

THERMAL EXPANSIONS

All the materials used to build the roofs, especially metals, are subject to **thermal expansion and contraction** phenomena, due to temperature changes. The stresses due to metal sheet thermal expansions act on the siding and can cause functional and structural product anomalies, particularly in case of:

- Significant panel length ($L > 5000$ mm);
- High solar radiation;
- Dark colours;
- High panel thickness;
- Inadequate thickness of the metal support.

Material	Thermal expansion coefficient ($^{\circ}\text{C}^{-1}$)
Aluminium	23.6×10^{-6}
Steel	12.0×10^{-6}
Stainless steel AISI 304	17.0×10^{-6}

-Linear thermal expansion coefficient values (UNI 10372 excerpt)-

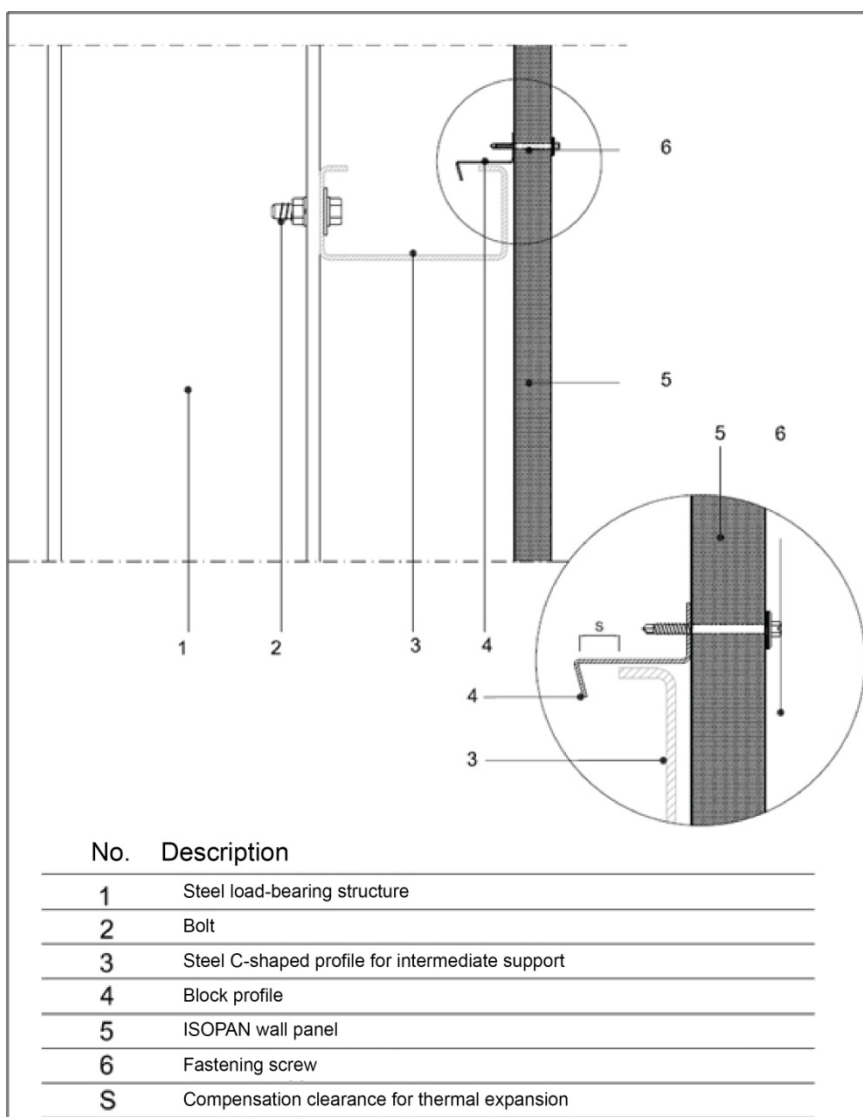
Type of facing		Surface temperature ($^{\circ}\text{C}$)	
		Min.	Max.
Insulated	Light	-20	+60
	Dark	-20	+80

Where "insulated" means that an insulating core is inserted between the external sheet and the structure; "light or dark" means the surface colour of the sheet.

-Temperature range (UNI 10372 excerpt)-

For high surface temperatures, the linear extension of the metal support must be absorbed by the system; cyclic temperature changes related to the day-night or freeze-thaw fluctuations create uncontrollable cyclic stresses that fatigue the support elements. These stresses may cause flaws and undulations in wall panels and, in more severe cases, even wrinkling phenomena. These issues may be overcome by complying with the requirements:

- Do not use dark colours on long panels
- Use suitable thickness of the metal supports (minimum 0.6 mm to be assessed based on the design specifics)
- Segment the panels
- Use a panel fastening system able to offset the shift caused by the excessive thermal expansions; this solution is particularly important when using panels with aluminium face (see for example figure below).



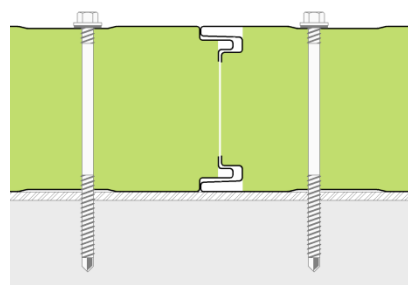
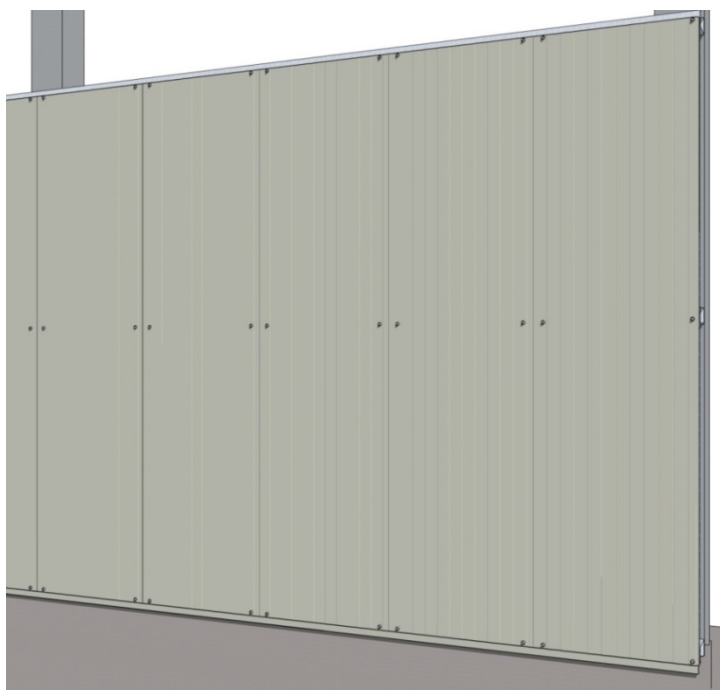
FASTENING INSTRUCTIONS

The purpose of the fastening elements is to efficiently anchor the panel to the load-bearing structure; the type of fastening unit depends on the type of face. The number and position of the fastening elements must guarantee resistance to the stresses induced by dynamic loads, which can also exist in depression.

Appropriately coated carbon steels or austenitic type stainless steels must be chosen as suitable materials to fasten panels. Pay particular attention to the compatibility of the steel and aluminium materials in order to prevent the formation of galvanic currents.

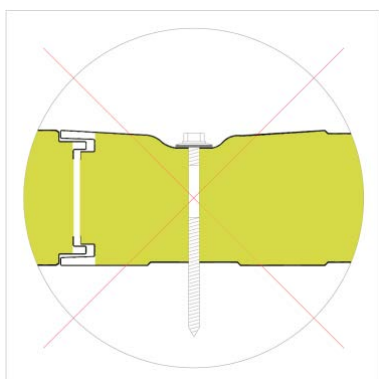
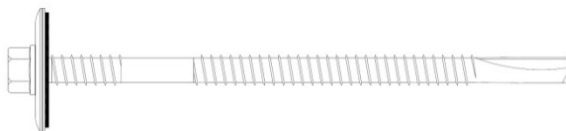
Wall panel fastening

The panels are usually anchored to metal sheets positioned transversally to the length of the panels, which are, in turn, appropriately fastened to the load-bearing structure of the building as required by the design for stability. The width of the support must be at least 50 mm; said width must be checked and, if necessary, increased based on design requirements. In the event of head junction between two panels, said width must be at least 120 mm. Panels must be fastened to the load-bearing structure using the devices identified and sized in the design. The number of fastening elements varies depending on the different climatic conditions where the building is situated. Normally, for each panel, a fastening unit must be used at each support sheet. With high spans between supports and/or in areas that are particularly exposed to wind action, the density of the fastening elements must be established by the designer on a case by case basis, appropriately increasing the number.



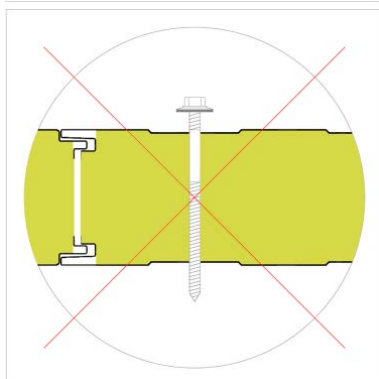
Fastening methods

Fastening varies depending on the project to be implemented and site application system of the panels. Isopan recommends using double-threaded screws with washer and sealing gasket with 19 mm minimum diameter.



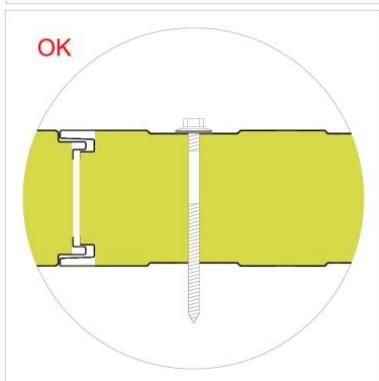
A

Incorrect tightening due to high torque applied to the screw with marked deformations of the sheet. **In this situation the optimal closing of the interlocking is no longer guaranteed, therefore, the aesthetic functionality of the product remains compromised.**



B

Incorrect tightening due to the torque applied to the screw being insufficient to ensure correct fastening of the panel to the structure.



C

Correct tightening obtained by applying sufficient torque to the screw to ensure fastening of the panel to the structure.

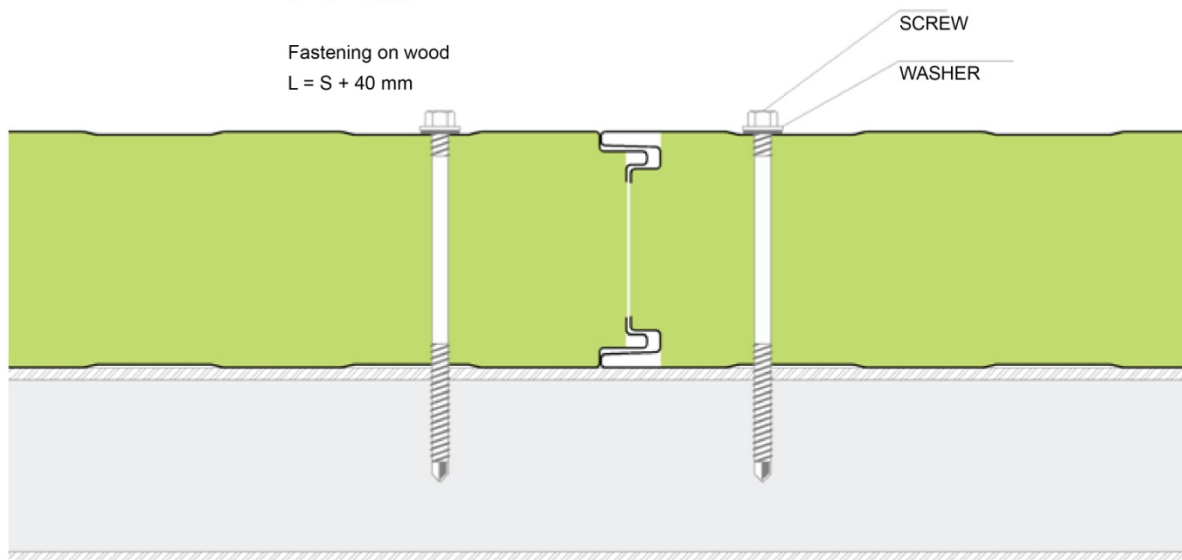
Screw length

The correct length of the screw depends on the panel thickness and on the type of face (steel, wood).

L = Length of screw
S = Thickness of screw

Fastening on steel
 $L = S + 30 \text{ mm}$

Fastening on wood
 $L = S + 40 \text{ mm}$



ASSEMBLY INSTRUCTIONS

The correct sequence of assembly operations is the following:

Preliminary operations

- Verify that the supports are properly aligned.
- Pay particular attention to the contact points between the supports and the panel support plates to avoid phenomena linked to electrochemical corrosion if incompatible metals are coupled. For this purpose, elastomer or expanded resin strips may be applied as separators.
- Ensure that the site area has appropriate storage and handling capacity in order to prevent material damage.
- Use suitable tools (toothed circular saw, jigsaw, shears, nibbler) for on-site cutting operations. The use of equipment that produces metallic sparks (e.g. abrasive discs, disc cutter) is absolutely not recommended.
- Use suitable handling systems, particularly for long or heavy panels, in order to prevent safety risks on site and damages to the product.

Using acetic silicones is prohibited as they tend to attack the pre-painted galvanised face and form incipient oxidation. It is best to use single component sealant silicones with neutral curing that tend to harden due to the air humidity and, being free of solvents, do not attack the paint.

Assembly

- Apply the basic tinwork (when provided) to the foot of the wall, as well as the tinwork that must be installed before the wall, such as drip edges, roof fittings, etc.
- Remove the protective film from the panels, if any.
- Apply the panels starting from the bottom of the wall, or the side end in case of vertical assembly, taking care to join them properly and to ensure they are plumb.*
- Systematically fasten the elements after ensuring they match correctly. The fastening screw must be inserted orthogonally to the panel.
- If the wall height involves the need to assemble panels vertically, the junction is made at the frame and requires appropriate use of shaped fitting tinwork (ridge caps, drip edges, etc.).
- Use "U"-shaped ridge caps and drip edges for doors and window frames.
- Apply the finishing elements (angle bars, perimeter edgings, fittings).
- Check and clean the walls, with particular attention to metal scraps, fastenings and fittings with door and window frames.
- For horizontal installation, the groove part of the panel must always be facing downward in order to prevent rainwater from stagnating and to promote normal run-off.

***Note: it is mandatory to adhere to the correct installation direction of the panels during assembly**

PACKAGE COMPOSITION

The panels are normally supplied packaged and wrapped with extensible polyethylene film; the standard composition of the package is as shown below:

Panel thickness (mm)	50	60	80	100	120	150	170	200
No. of panels per package	15	12	9	7	6	5	4	3

Package compositions and types of packaging other than standard must be explicitly requested when ordering.

TRANSPORT AND STORAGE

Lorry loading

- The packages of panels are loaded on lorries, usually two in width and three in height. The packages include polystyrene spacers at the base, which are thick enough to allow for the lifting straps.
- The goods are arranged on the vehicles so as to ensure safe transportation and integrity of the material, in accordance with the requirements of the carrier, who is solely responsible for load integrity. Pay special attention to ensure the weight bearing on the bottom package, as well as the pressure exerted in the tying points, do not cause damage and the straps do not distort the shape of the product in any way.
- Isopan assumes no liability for loading lorries that are already partially occupied by other materials, or that do not have a suitable loading floor.

Customers who will pick up the material must instruct the drivers accordingly.

Lorry unloading with crane

- Use any type of crane equipped with spreader beam and equipped straps. Isopan can advise customers on the choice of spreader beams and straps. By using correct lifting systems, the panels will not be damaged.
- Never use chains or metal cables for lifting under any circumstances. As a general rule, sling the packages leaving about 1/4 of their length protruding from each end.

Lorry unloading with forklifts

- If the lorries are unloaded using a forklift, the length of the packages and their possible bending should be taken into account in order to prevent damages to the bottom of the package.
- The forks must be wide and long enough in order not to damage the product. When possible, protective material against surface abrasion and scratches should be applied between the fork and the package.

Indoor storage (Annex A)

- The materials must be stored in ventilated indoor facilities that are free of dust and humidity and not subject to temperature changes.
- Moisture that can penetrate (rain) or form (condensation) between two panels can damage the facings since it is particularly aggressive on metals and facings, with subsequent oxidation.
- Pre-painted facings may be more exposed to the negative consequences of combined heat/humidity conditions.

Outdoor storage (Annex A)

- If the packages and accessories are stored outdoors, the surface must absolutely be inclined longitudinally to prevent moisture from accumulating and to allow water run-off and natural air circulation.
- If storage is not shortly followed by pick-up for installation, it is advisable to cover the packages with a protective tarp, assuring impermeability as well as adequate ventilation to prevent condensate from accumulating and puddles of water from forming.

Storage terms (Annex A)

- Based on experience, in order to maintain original product performance, continuous indoor storage in closed and ventilated facilities should not exceed six months, while outdoor storage should never exceed sixty days from the date of production. These terms refer to the properly stored product, as instructed in the "storage" chapter in Annex A. However, the materials must always be protected against direct sunlight, as it may cause alterations.
- In case of transport in containers, the products must be removed from the containers as soon as possible and, however, no later than 15 days from the loading date, to prevent deterioration of the metal supports and organic coatings (e.g. blistering). Moisture inside the container must absolutely be avoided. Upon customer request, Isopan can provide special packages that are more suitable for transport in containers.

PACKAGING

Isopan suggests carefully choosing the type of packaging depending on destination, type of transport, conditions and length of storage.

To choose the correct type of packaging, please refer to the "**Packaging and Services**" document on www.isopan.it.

DURABILITY

Product durability depends on the intrinsic features of the panel used in relation with its final use. The panel, including the features of the metal supports, must be chosen after the wall has been properly designed.

In this regard we recommend, if necessary, using the Isopan documentation, also available on the web (www.isopan.com), and/or the reference standards.

MAINTENANCE

All types of facings, including those made with metal sandwich panels, require maintenance.

The type and frequency of maintenance activities depend on the product used for the external facing (steel, aluminium); in any case, we recommend periodically inspecting the building (at least once a year), in order to assess its conditions.

In order to maintain the aesthetic and physical properties of the elements and to extend the efficiency of the protective facing, it is also recommended to regularly clean the roof, paying special attention to the areas that could facilitate rain water stagnation, where substances that are harmful to the durability of the metal support may be concentrated.

If you notice any problems following an on-site inspection, you must react immediately in order to restore the initial general conditions (e.g. restoring the paint where there are local abrasions or scratches).

Upon customer request, Isopan can provide useful information to solve some problems related to this topic.

SAFETY AND DISPOSAL

Pursuant to Directive 68/548/EEC the sandwich panel does not require labelling. To meet customer requirements, Isopan has drawn-up a "Technical details for safety" document, to be referenced for any kind of information related to safety.

Caution: all information contained in the product data sheets must be validated by a qualified technician according to the laws in force in the country where the panels are installed.

Technical specifications and features are not binding. Isopan reserves the right to make changes without prior notice; the latest documentation is available on our website www.isopan.it. For whatever is not explicitly specified herein, please refer to the "General conditions of sale of the corrugated metal sheets, insulated metal panels and accessories". All the products that fall under the EN 14509 standard field of application are CE marked.

This document and all the elements it contains are the exclusive property of Isopan. Reproduction, even in part, of the texts and any images contained herein without the author's written authorisation is forbidden.

Copyright © 2015 – ISOPAN S.p.A.

Annex A

LORRY UNLOADING WITH CRANE

For lifting, the packages must always be attached in at least two points. The distance between them must be no less than half the length of the packages.

Lifting should be possibly carried out using synthetic fibre straps (Nylon) no thinner than 10 cm, so that the load is distributed on the strap and does not cause distortion. (see Figure 1)



Figure 1

Suitable spacers must be placed under and above the package, made of sturdy solid wood or plastic elements to prevent the strap from coming into direct contact with the package. These spacers must be at least 4 cm longer than the width of the package and be at least as wide as the strap. Make sure that the straps and supports cannot move during lifting and that manoeuvres are performed cautiously.

LORRY UNLOADING WITH FORKLIFTS

If the lorries are unloaded with a forklift, take into account the length of the packages and their possible bending in order to avoid damaging the bottom of the package and/or to the extreme failure limit of the panels.

We recommend using forklifts that are suitable for handling panels and similar products.

STORAGE

The packages must always be kept off the ground both in the warehouse and, more so, at the construction site. They must have plastic foam supports with flat surfaces longer than the width of the panels and at a distance adequate to the features of the product.

The packages should preferably be stored in dry facilities to prevent stagnation of condensation water on inner, less ventilated elements, which is particularly aggressive on metals, resulting in the formation of oxidation.

The panels must be stored in dry ventilated facilities; should this not be possible, open the packages and ventilate the panels (spacing them from each other). If the panels remain packaged outdoors, the galvanised facing may oxidise (white rust) even after a few days, due to electrolytic corrosion.

The panels must be stored to facilitate water run-off, especially when it is necessary to temporarily store them outside (see Figure 2).

If storage is not shortly followed by pick-up for installation, it is advisable to cover the packages with protective tarps.

To maintain original product performance, continuous indoor storage in ventilated facilities should not exceed 6 months, while outdoor storage should never exceed 60 days.

Packages stored at a height must always be properly bound to the structure.

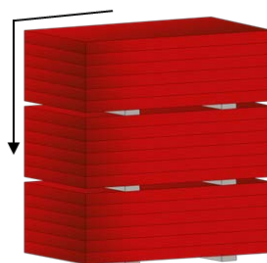


Figure 2

PRE-PAINTED FACES



In case of prolonged storage, the pre-painted products must be stored indoors or under a canopy. There is the risk that stagnant humidity may attack the paint layer, causing it to detach from the galvanised face. It is not advisable to wait for more than two weeks from when the products were stored at the site.

In case of container transport, the products must be removed from the container within 15 days from the loading date in order to prevent the metal supports from deteriorating.

PANEL HANDLING

The panels must be handled using adequate protection equipment (accident-prevention shoes, gloves, overalls, etc.) in compliance with current regulations.

The individual element must always be manually handled by lifting the element without dragging it on the ground and turning it sideways beside the package; it must be transported by at least two people according to the length, keeping the element on its side. (see Figure 3)

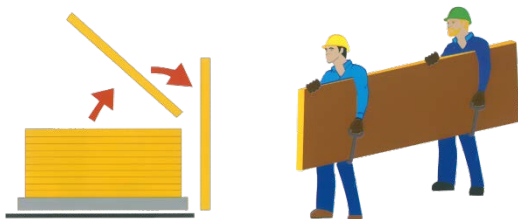


Figure 3

Handling equipment as well as gloves must be clean and such not to damage the items.

INSTALLATION

Panel installation personnel must be qualified and know the correct technique to perform the work in a workmanlike manner.

If required, the seller can provide appropriate guidance and instructions.

Installation personnel must be equipped with footwear with soles that do not damage the external facing of the panel.

On-site cutting operations must be done with suitable tools (jigsaw, shears, nibbler, etc.).

We do not recommend using tools with abrasive discs.

To fasten the panels, it is advisable to use devices that can be provided by the seller.

Tighten the screws using a screwdriver with torque limitation.

For roofs with pitch elements without intermediate joints (overlaps), the slope is usually no less than 7%. For smaller slopes, adopt the seller's provisions.

In case of head overlaps, the slope should take into account the type of joint and material used, as well as the specific environmental conditions.

During panel assembly and, in particular, in roofs, it is necessary to immediately remove all residual materials paying special attention to metal ones that may cause early deterioration of the metal supports by oxidising.

PROTECTIVE FILM

The pre-painted metal facings are supplied upon request with adhesive polyethylene protective film that prevents damage to the paint layer.

The protective film covering the pre-painted panels must be completely removed during assembly or, in any case, within 60 days from material preparation.

It is also recommended not to expose the panels covered by a protective film to direct sunlight.



Maximum 2 months

For panels expressly requested without protective film, special care is required during on-site handling and installation.

MAINTENANCE

The main routine maintenance operation is cleaning the panels. Panel surfaces that, following visual inspection, are found to be dirty or oxidised can be washed with soap and water using a soft brush. Cleaning water pressure can be applied up to 50 bar, but the jet must not be too close or perpendicular to the surfaces. Near the joints the water must be sprayed at a sufficient angle not to undermine their tightness.

YEARLY CHECKS OF THE ISOPAN PANELS

WHAT TO INSPECT	CORRECTIVE ACTIONS
Conditions of the pre-painted surfaces (cracks and colour unevenness)	Assess the condition of the surfaces Repaint where possible
Scratches and dents	Repaint and repair dents
Fastening screws	Remove a screw and check if oxidised Tighten the screws where necessary
Angular cut-edge parts	Check the state of oxidation Clean and repaint

These provisions are taken from the General Conditions of Sale.

Annex B

SUCTION CUP LIFTERS

In the event the panels are handled using **suction cup lifters** the operations must be carried out ensuring the panel is not deformed. The action of the suction cup on the sheet during lifting must be **adequately redistributed** taking into account the panel's **length** and **weight**.

To prevent excessive force by the suction cups from causing detachment of the sheet from the insulating core, Isopan recommends complying with the following restrictions:

Polyurethane panels:

Minimum Total Surface of Suction Cups for Polyurethane Panel with Steel face 0.4 / 0.4												
Panel Length	Panel thickness [mm]											
	25	30	35	40	50	60	80	100	120	150	180	200
2000 mm	340 cm2	350 cm2	350 cm2	360 cm2	380 cm2	390 cm2	430 cm2	460 cm2	490 cm2	540 cm2	590 cm2	620 cm2
3500 mm	590 cm2	600 cm2	620 cm2	630 cm2	660 cm2	690 cm2	740 cm2	800 cm2	850 cm2	940 cm2	1,020 cm2	1,080 cm2
5000 mm	840 cm2	860 cm2	880 cm2	900 cm2	940 cm2	980 cm2	1,060 cm2	1,140 cm2	1,220 cm2	1,340 cm2	1,460 cm2	1,540 cm2
6500 mm	1,090 cm2	1,120 cm2	1,140 cm2	1,170 cm2	1,220 cm2	1,270 cm2	1,380 cm2	1,480 cm2	1,580 cm2	1,740 cm2	1,900 cm2	2,000 cm2
8000 mm	1,340 cm2	1,370 cm2	1,400 cm2	1,440 cm2	1,500 cm2	1,560 cm2	1,690 cm2	1,820 cm2	1,950 cm2	2,140 cm2	2,330 cm2	2,460 cm2
10000 mm	1,670 cm2	1,710 cm2	1,750 cm2	1,790 cm2	1,870 cm2	1,950 cm2	2,110 cm2	2,270 cm2	2,430 cm2	2,670 cm2	2,910 cm2	3,070 cm2
13000 mm	2,170 cm2	2,230 cm2	2,280 cm2	2,330 cm2	2,430 cm2	2,540 cm2	2,750 cm2	2,950 cm2	3,160 cm2	3,470 cm2	3,790 cm2	3,990 cm2

Minimum Total Surface of Suction Cups for Polyurethane Panel with Steel face 0.6 / 0.6

Panel Length	Panel thickness [mm]											
	25	30	35	40	50	60	80	100	120	150	180	200
2000 mm	490 cm2	490 cm2	500 cm2	510 cm2	530 cm2	540 cm2	570 cm2	610 cm2	640 cm2	690 cm2	730 cm2	770 cm2
3500 mm	850 cm2	860 cm2	870 cm2	890 cm2	920 cm2	940 cm2	1,000 cm2	1,060 cm2	1,110 cm2	1,200 cm2	1,280 cm2	1,340 cm2
5000 mm	1,210 cm2	1,230 cm2	1,250 cm2	1,270 cm2	1,310 cm2	1,350 cm2	1,430 cm2	1,510 cm2	1,590 cm2	1,710 cm2	1,830 cm2	1,910 cm2
6500 mm	1,570 cm2	1,590 cm2	1,620 cm2	1,640 cm2	1,700 cm2	1,750 cm2	1,850 cm2	1,960 cm2	2,060 cm2	2,220 cm2	2,370 cm2	2,480 cm2
8000 mm	1,930 cm2	1,960 cm2	1,990 cm2	2,020 cm2	2,090 cm2	2,150 cm2	2,280 cm2	2,410 cm2	2,530 cm2	2,730 cm2	2,920 cm2	3,050 cm2
10000 mm	2,410 cm2	2,450 cm2	2,490 cm2	2,530 cm2	2,610 cm2	2,690 cm2	2,850 cm2	3,010 cm2	3,170 cm2	3,410 cm2	3,650 cm2	3,810 cm2
13000 mm	3,130 cm2	3,180 cm2	3,230 cm2	3,280 cm2	3,390 cm2	3,490 cm2	3,700 cm2	3,910 cm2	4,120 cm2	4,430 cm2	4,740 cm2	4,950 cm2

Minimum Total Surface of Suction Cups for Polyurethane Panel with Steel face 0.8 / 0.8

Panel Length	Panel thickness [mm]											
	25	30	35	40	50	60	80	100	120	150	180	200
2000 mm	630 cm2	640 cm2	650 cm2	660 cm2	670 cm2	690 cm2	720 cm2	750 cm2	780 cm2	830 cm2	880 cm2	910 cm2
3500 mm	1,100 cm2	1,120 cm2	1,130 cm2	1,140 cm2	1,170 cm2	1,200 cm2	1,260 cm2	1,310 cm2	1,370 cm2	1,450 cm2	1,540 cm2	1,590 cm2
5000 mm	1,570 cm2	1,590 cm2	1,610 cm2	1,630 cm2	1,670 cm2	1,710 cm2	1,790 cm2	1,870 cm2	1,950 cm2	2,070 cm2	2,190 cm2	2,270 cm2
6500 mm	2,040 cm2	2,070 cm2	2,100 cm2	2,120 cm2	2,170 cm2	2,230 cm2	2,330 cm2	2,430 cm2	2,540 cm2	2,690 cm2	2,850 cm2	2,950 cm2
8000 mm	2,510 cm2	2,550 cm2	2,580 cm2	2,610 cm2	2,670 cm2	2,740 cm2	2,870 cm2	2,990 cm2	3,120 cm2	3,310 cm2	3,510 cm2	3,630 cm2
10000 mm	3,140 cm2	3,180 cm2	3,220 cm2	3,260 cm2	3,340 cm2	3,420 cm2	3,580 cm2	3,740 cm2	3,900 cm2	4,140 cm2	4,380 cm2	4,540 cm2
13000 mm	4,080 cm2	4,130 cm2	4,190 cm2	4,240 cm2	4,340 cm2	4,450 cm2	4,650 cm2	4,860 cm2	5,070 cm2	5,380 cm2	5,690 cm2	5,900 cm2

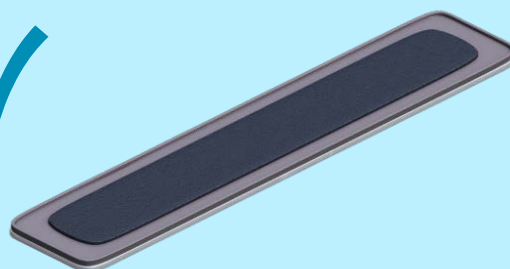
Mineral wool panels:

Minimum Total Surface of Suction Cups for Mineral Wool Panel with Steel face 0.5 / 0.5							
Panel Length	Panel thickness [mm]						
	50	60	80	100	120	150	200
2000 mm	470 cm ²	490 cm ²	510 cm ²	530 cm ²	570 cm ²	610 cm ²	690 cm ²
3500 mm	820 cm ²	860 cm ²	890 cm ²	930 cm ²	1,000 cm ²	1,070 cm ²	1,210 cm ²
5000 mm	1,170 cm ²	1,220 cm ²	1,270 cm ²	1,320 cm ²	1,420 cm ²	1,520 cm ²	1,720 cm ²
6500 mm	1,520 cm ²	1,590 cm ²	1,650 cm ²	1,720 cm ²	1,850 cm ²	1,980 cm ²	2,240 cm ²
8000 mm	1,870 cm ²	1,950 cm ²	2,030 cm ²	2,110 cm ²	2,270 cm ²	2,430 cm ²	2,750 cm ²
10000 mm	2,340 cm ²	2,440 cm ²	2,540 cm ²	2,640 cm ²	2,840 cm ²	3,040 cm ²	3,440 cm ²
13000 mm	3,040 cm ²	3,170 cm ²	3,300 cm ²	3,430 cm ²	3,690 cm ²	3,950 cm ²	4,470 cm ²

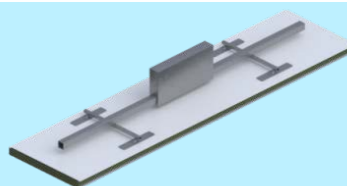
Minimum Total Surface of Suction Cups for Mineral Wool Panel with Steel face 0.8 / 0.8							
Panel Length	Panel thickness [mm]						
	50	60	80	100	120	150	200
2000 mm	690 cm ²	710 cm ²	730 cm ²	750 cm ²	790 cm ²	830 cm ²	910 cm ²
3500 mm	1,210 cm ²	1,240 cm ²	1,280 cm ²	1,310 cm ²	1,380 cm ²	1,450 cm ²	1,590 cm ²
5000 mm	1,720 cm ²	1,770 cm ²	1,820 cm ²	1,870 cm ²	1,970 cm ²	2,070 cm ²	2,270 cm ²
6500 mm	2,240 cm ²	2,300 cm ²	2,370 cm ²	2,430 cm ²	2,560 cm ²	2,690 cm ²	2,950 cm ²
8000 mm	2,750 cm ²	2,830 cm ²	2,910 cm ²	2,990 cm ²	3,150 cm ²	3,310 cm ²	3,630 cm ²
10000 mm	3,440 cm ²	3,540 cm ²	3,640 cm ²	3,740 cm ²	3,940 cm ²	4,140 cm ²	4,540 cm ²
13000 mm	4,470 cm ²	4,600 cm ²	4,730 cm ²	4,860 cm ²	5,120 cm ²	5,380 cm ²	5,900 cm ²

Note: For thicknesses not listed in the table, perform linear interpolation.

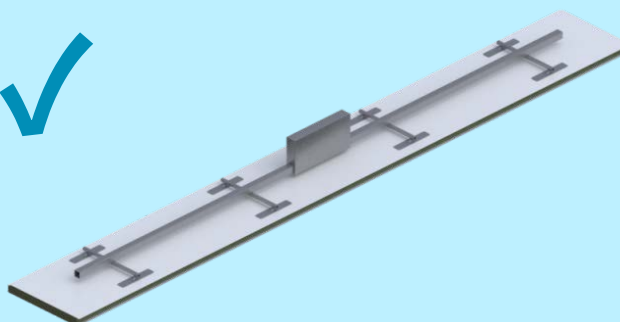
**TO ASSURE SHEET PLANARITY
DURING SUCTION, A SUITABLE
STIFFENING PAD MUST BE INSERTED
IN THE SUCTION CUP**



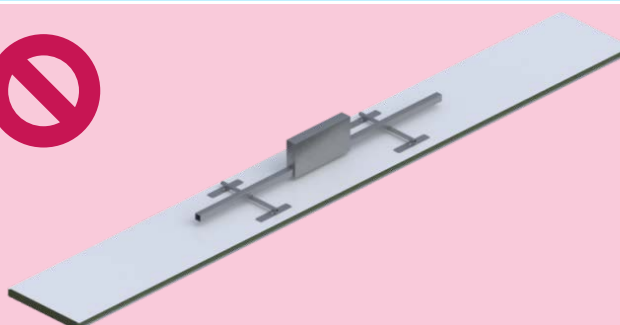
**AT LEAST 4 SUCTION CUPS
EQUALLY DISTRIBUTED FOR PANEL
LENGTHS LESS THAN 6 m**



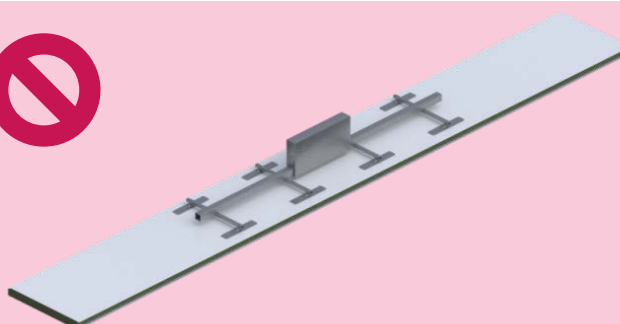
**AT LEAST 8 SUCTION CUPS
EQUALLY DISTRIBUTED FOR PANEL
LENGTHS EXCEEDING 6 m**



**INSUFFICIENT NUMBER OF SUCTION
CUPS**



**SUCTION CUPS NOT EQUALLY
DISTRIBUTED**



Annex C

BUILDING DETAILS

RAO 01 - Recessed wall corner connection

RAO 05 - Wall corner connection

RPCV 01 - Roof wall connection with insulated gutter

RPCV 03 - Roof wall connection with gutter

RPCV 04 - Roof wall connection

RPCV 13 - Flat roof wall connection

RPCV 14 - Roof wall connection with insulated gutter

SPO 13 - Horizontal butt joint

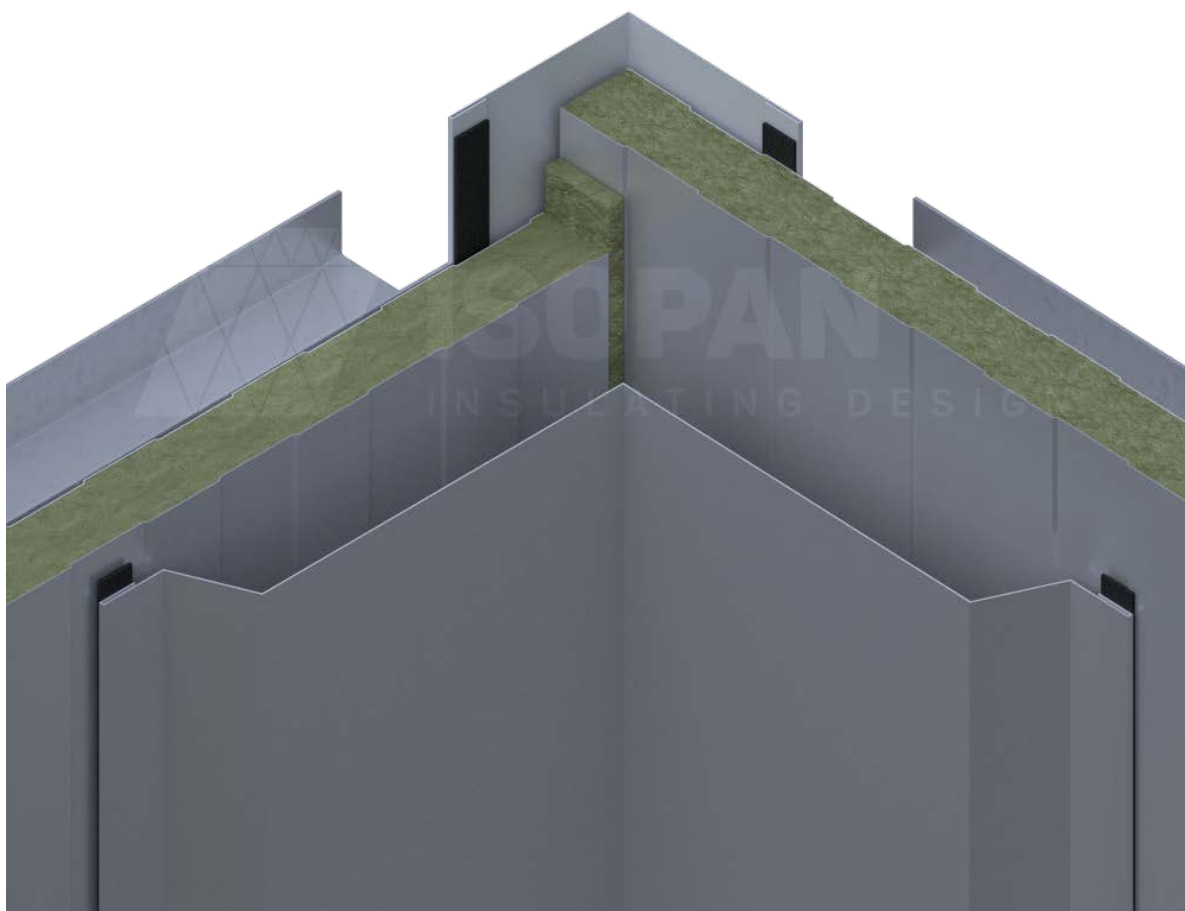
SPO 15 - Horizontal butt joint (for thermal expansion)

SPV 17 - Vertical butt joint

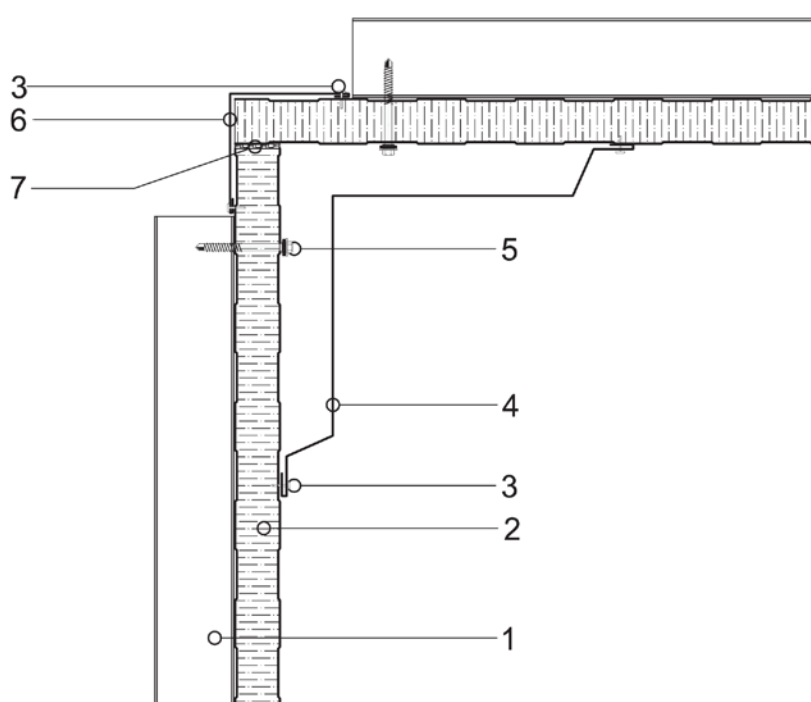
SPV 18 - Wall panel fastening in the event of thermal expansion

SPV 19 - Concrete base kerb wall panel connection

WALL CORNER CONNECTION – RECESSED



Type 1 wall angular connection: horizontal cross-section



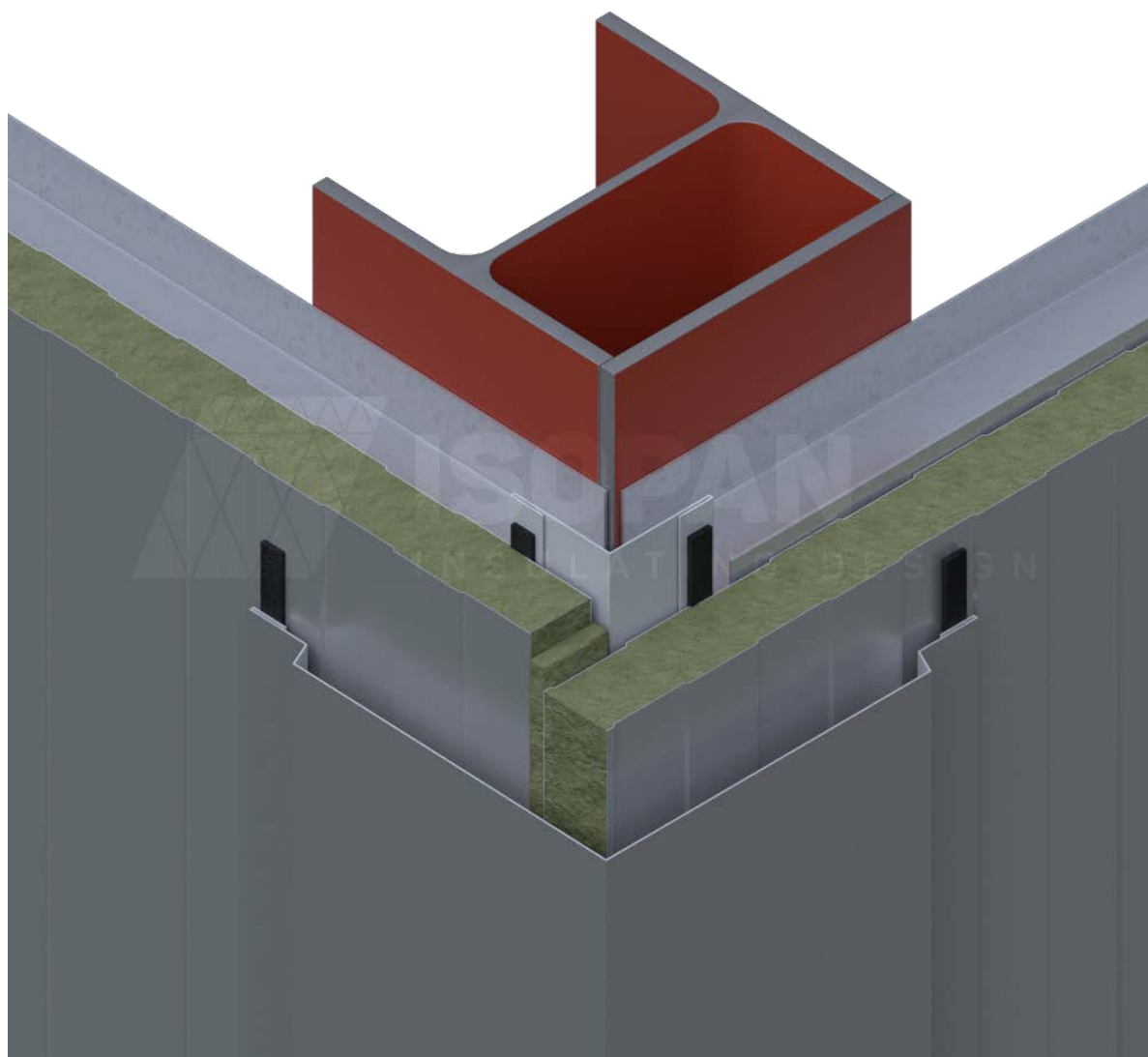
The designer is responsible for assessing the need to insert additional gasket and/or closing elements, even when not indicated in the drawing details.

Key

1	Steel structure
2	ISOPAN mineral wool wall panel
3	Rivet
4	External side corner connection metal sheet
5	Panel fastening screw
6	Internal side corner connection metal sheet
7	Polyurethane foam or mineral wool insulating material

ATTENTION: the proposed solution does not represent a project, and must be examined and assessed prior by the designer or Clerk of Works. The property rights of this document belong exclusively to ISOPAN S.p.A. Reproduction even in part without prior written authorisation by the author is forbidden. To choose the type of fastening, please refer to the screw type choice sheet; To choose the screw length, please refer to the data sheet for the correct screw length.

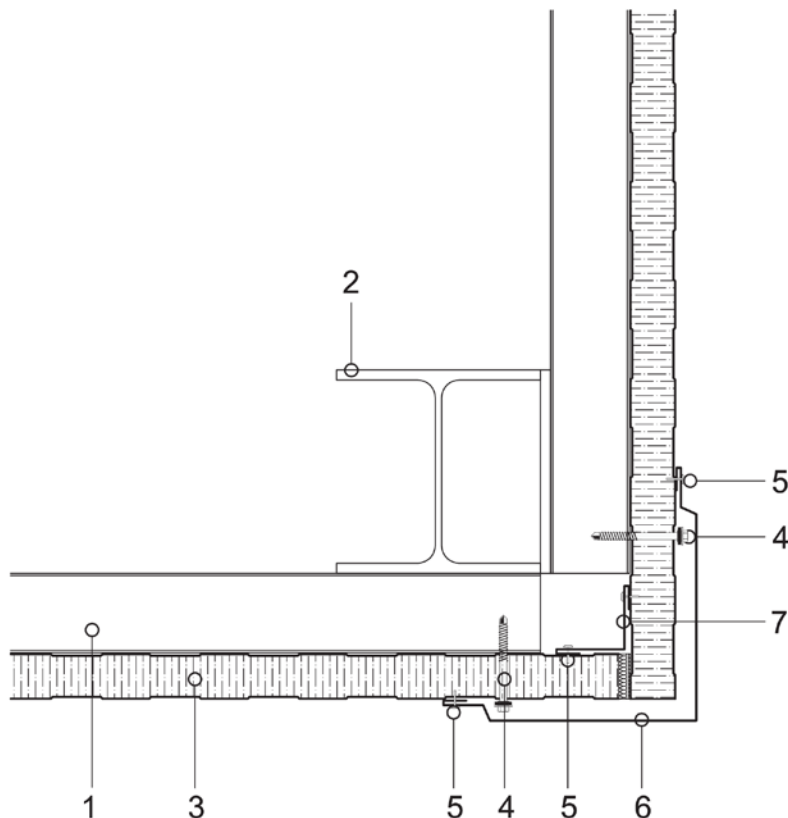
WALL CORNER CONNECTION





RAO 05fw

Type 5 wall angular connection: horizontal cross-section



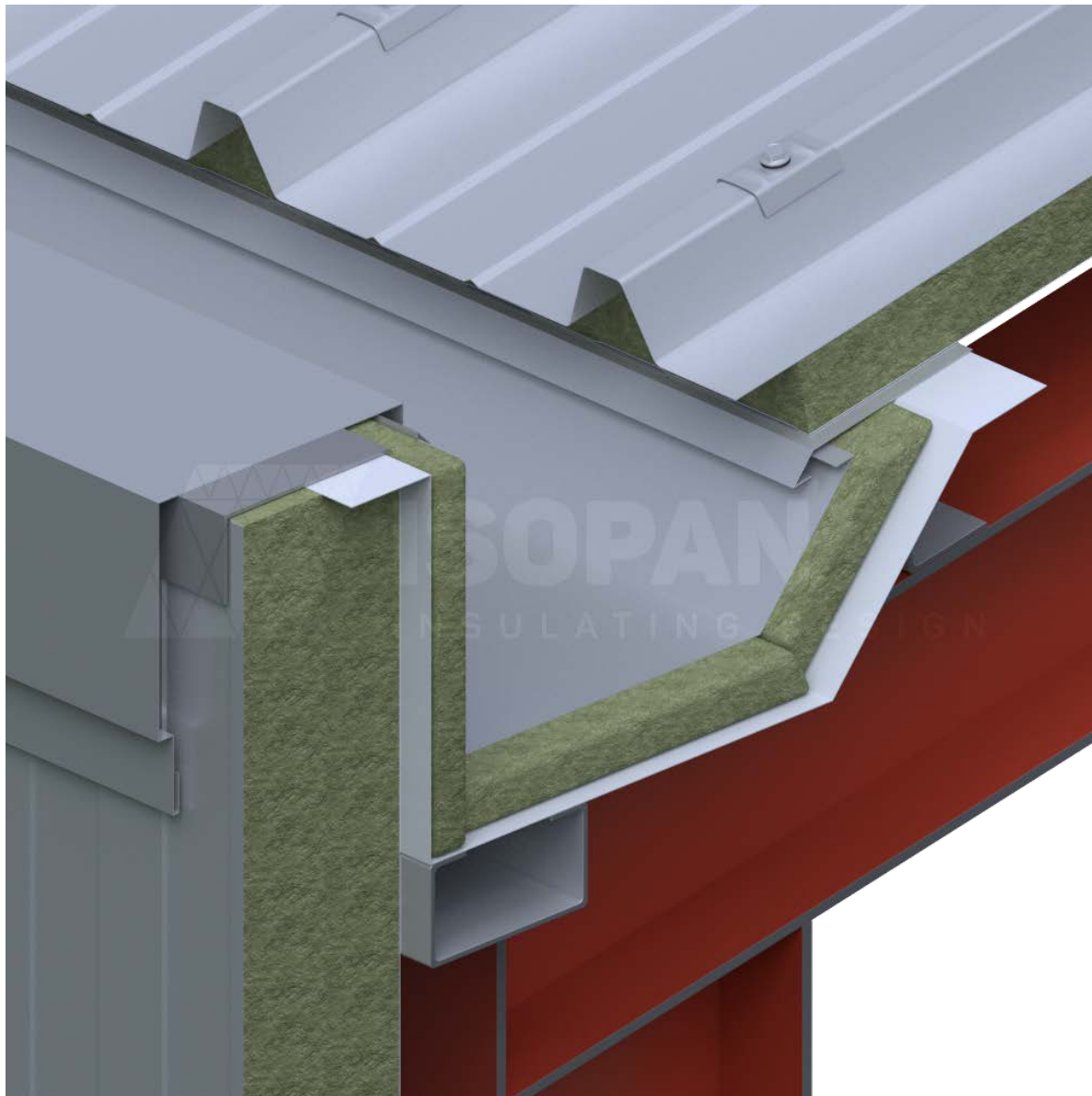
The designer is responsible for assessing the need to insert additional gasket and/or closing elements, even when not indicated in the drawing details.

Key

1	Steel structure
2	HEA profile
3	ISOPAN mineral wool wall panel
4	Panel fastening screw
5	Rivet
6	External side corner connection metal sheet
7	Internal side corner connection metal sheet

ATTENTION: the proposed solution does not represent a project, and must be examined and assessed prior by the designer or Clerk of Works. The property rights of this document belong exclusively to ISOPAN S.p.a. Reproduction even in part without prior written authorisation by the author is forbidden. To choose the type of fastening, please refer to the screw type choice sheet; To choose the screw length, please refer to the data sheet for the correct screw length.

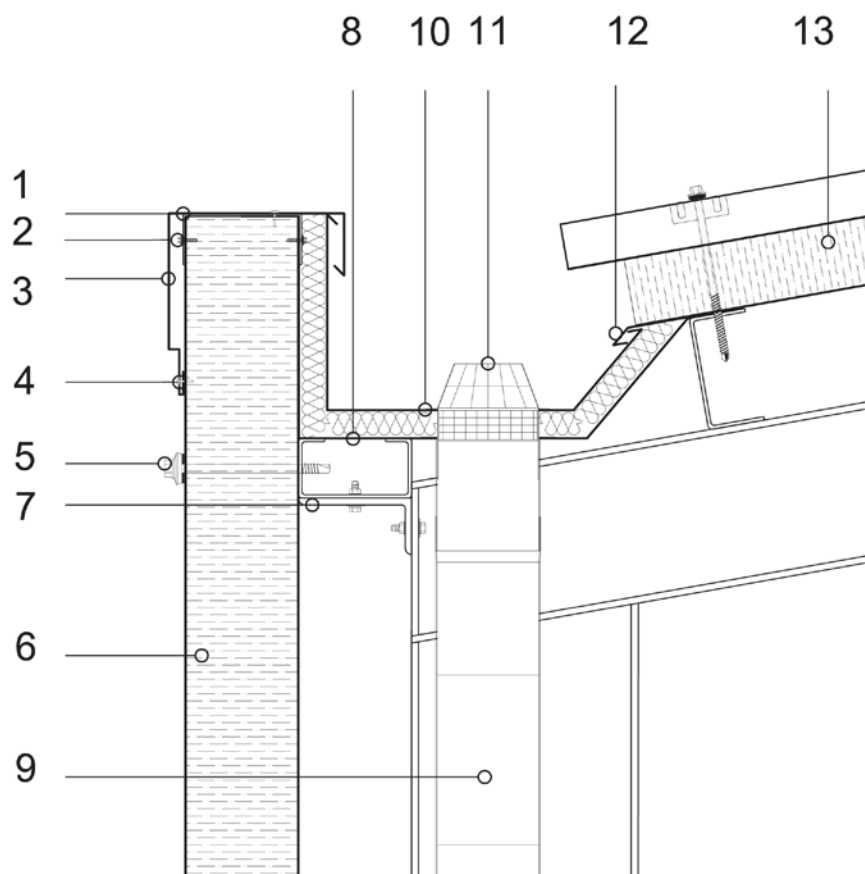
ROOF WALL CONNECTION WITH INSULATED GUTTER





RPCV 01fw

Roof wall connection with insulated gutter



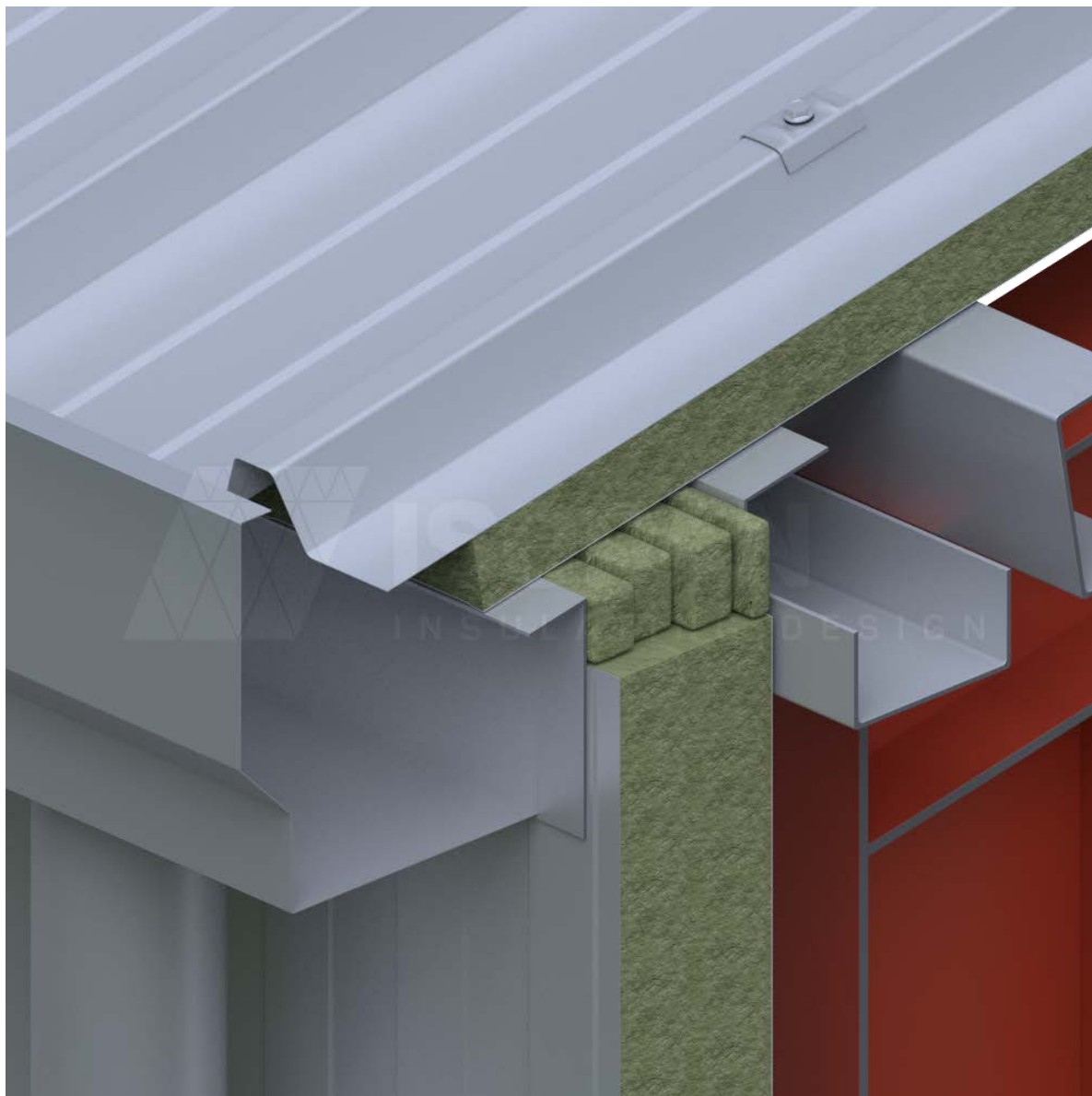
The designer is responsible for assessing the need to insert additional gasket and/or closing elements, even when not indicated in the drawing details.

Key

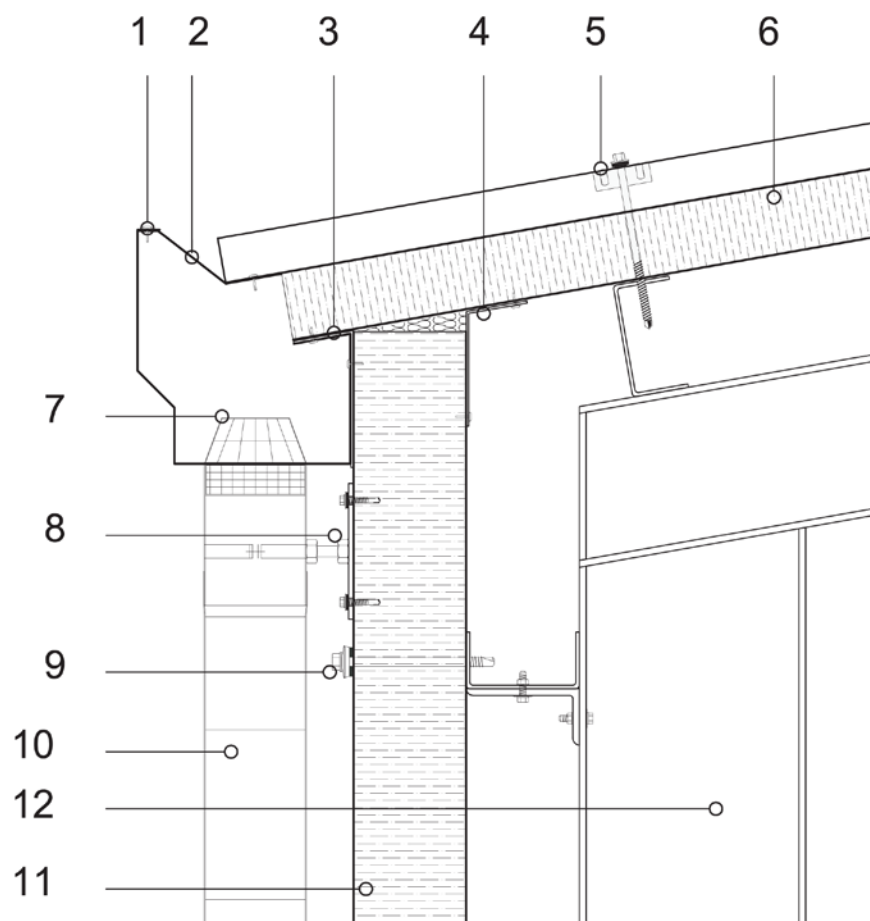
1	Head closing metal sheet	11	Leaf screen
2	Fastening screw	12	Drip edge metal sheet
3	Protective metal sheet	13	ISOPAN rock wool roof panel
4	Rivet		
5	Through fastening screw		
6	ISOPAN rock wool wall panel		
7	Steel load-bearing structure		
8	Eaves metal sheet		
9	Drainpipe		
10	Gutter		

ATTENTION: the proposed solution does not represent a project, and must be examined and assessed prior by the designer or Clerk of Works. The property rights of this document belong exclusively to ISOPAN S.p.a. Reproduction even in part without prior written authorisation by the author is forbidden. To choose the type of fastening, please refer to the screw type choice sheet; To choose the screw length, please refer to the data sheet for the correct screw length.

ROOF WALL CONNECTION WITH GUTTER



Type 1 roof wall connection with gutter



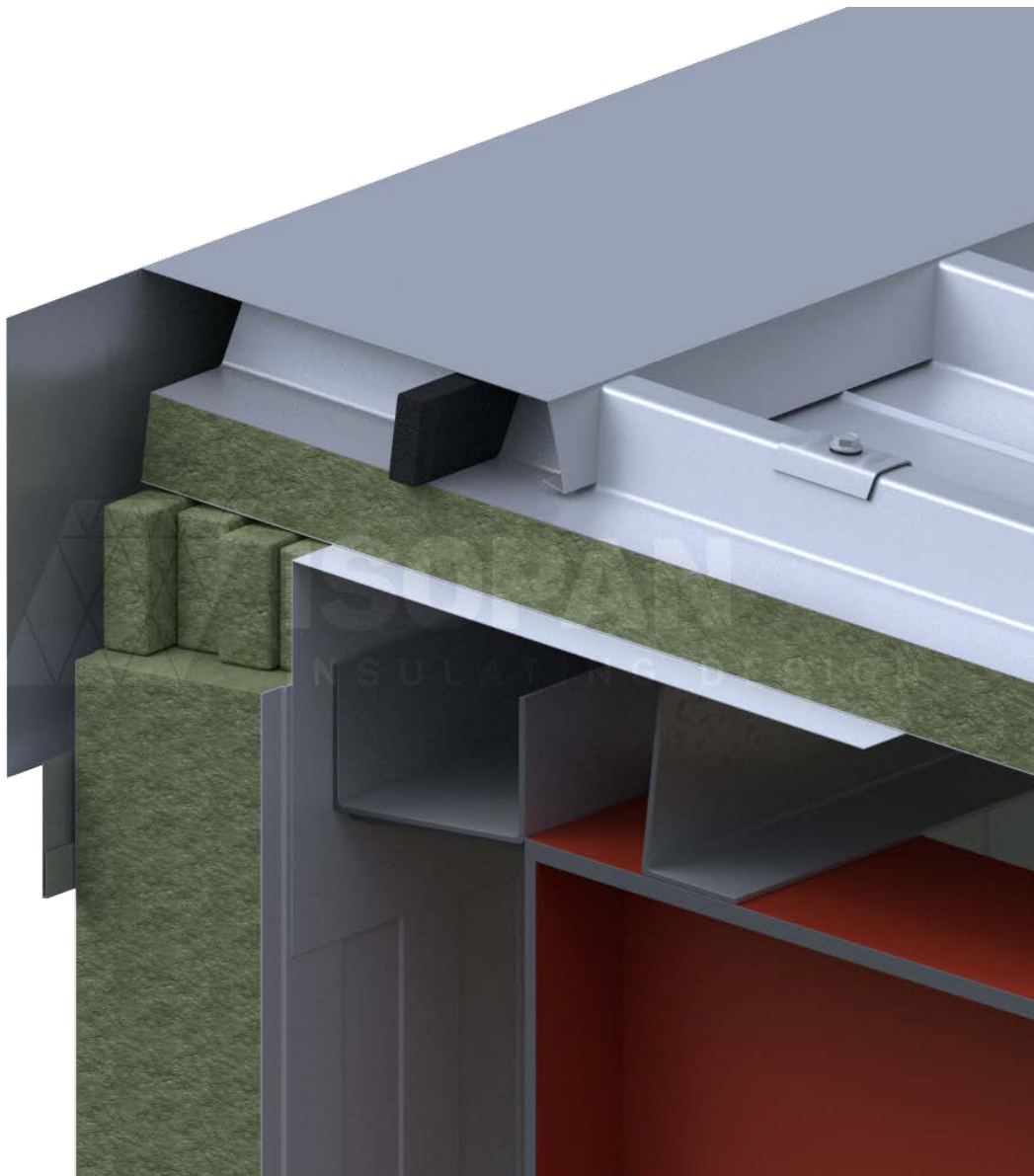
The designer is responsible for assessing the need to insert additional gasket and/or closing elements, even when not indicated in the drawing details.

Key

1	Rivet	11	ISOPAN mineral wool wall panel
2	Gutter support metal sheet	12	Main structure
3	External closing corner metal sheet		
4	Internal closing corner metal sheet		
5	Roof panel fastening unit		
6	ISOPAN mineral wool roof panel		
7	Leaf screen		
8	Gutter fastening unit		
9	Through fastening screw		
10	Gutter		

ATTENTION: the proposed solution does not represent a project, and must be examined and assessed prior by the designer or Clerk of Works. The property rights of this document belong exclusively to ISOPAN S.p.a. Reproduction even in part without prior written authorisation by the author is forbidden. To choose the type of fastening, please refer to the screw type choice sheet; To choose the screw length, please refer to the data sheet for the correct screw length.

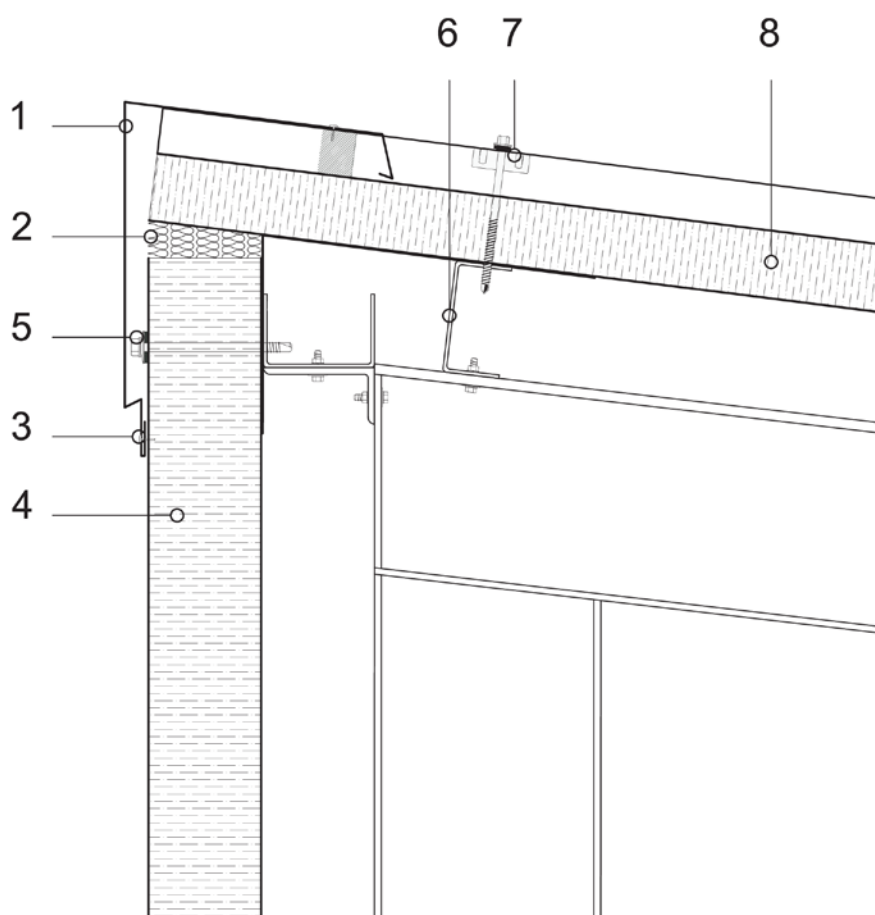
ROOF WALL CONNECTION





RPCV 04fw

Type 1 roof wall connection



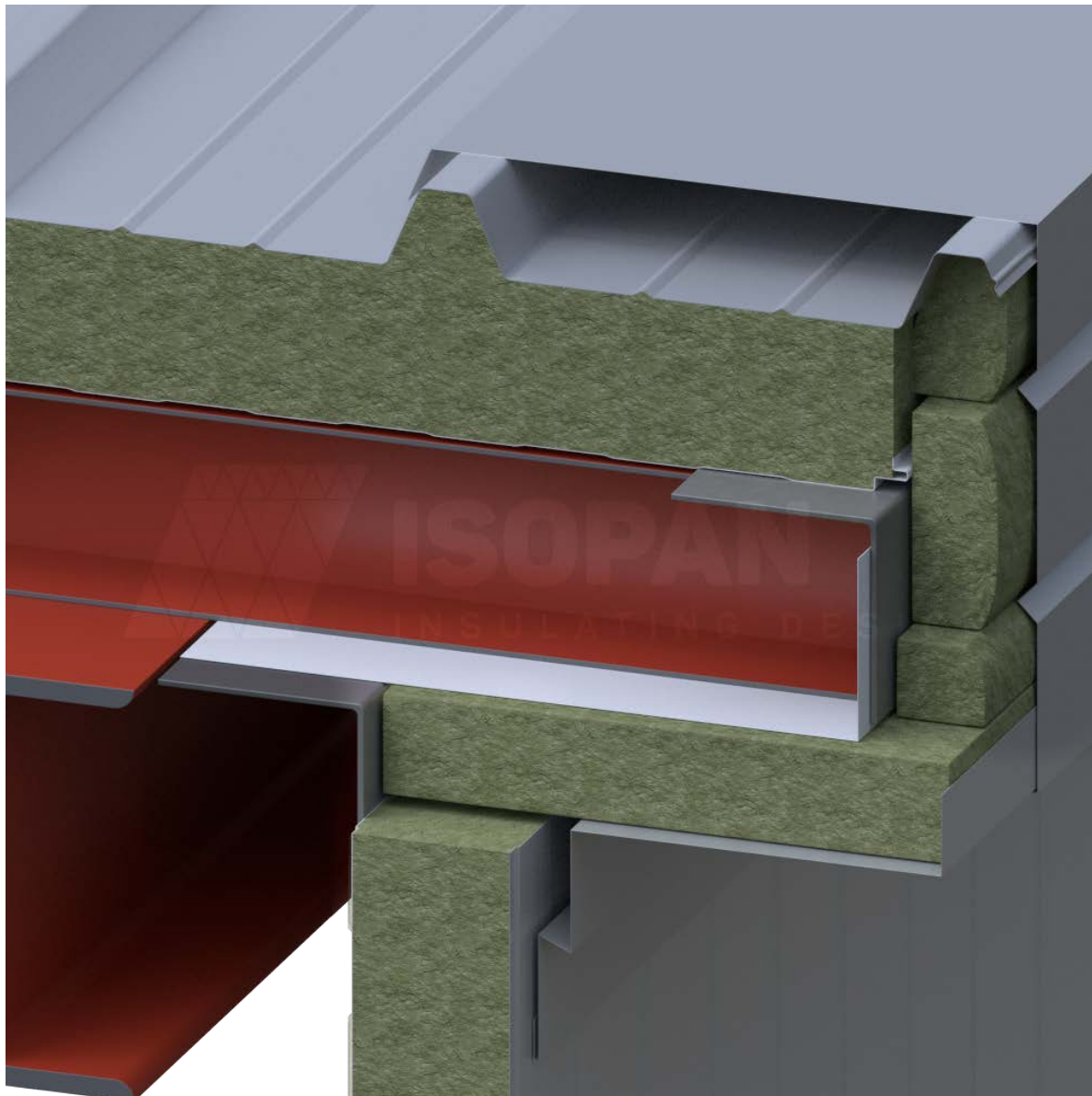
The designer is responsible for assessing the need to insert additional gasket and/or closing elements, even when not indicated in the drawing details.

Key

1	Closing metal sheet
2	Polyurethane foam insulating material
3	Rivet
4	ISOPAN mineral wool wall panel
5	Through fastening screw
6	Secondary steel structure
7	Roof - metal sheet through fastening screw
8	ISOPAN mineral wool roof panel

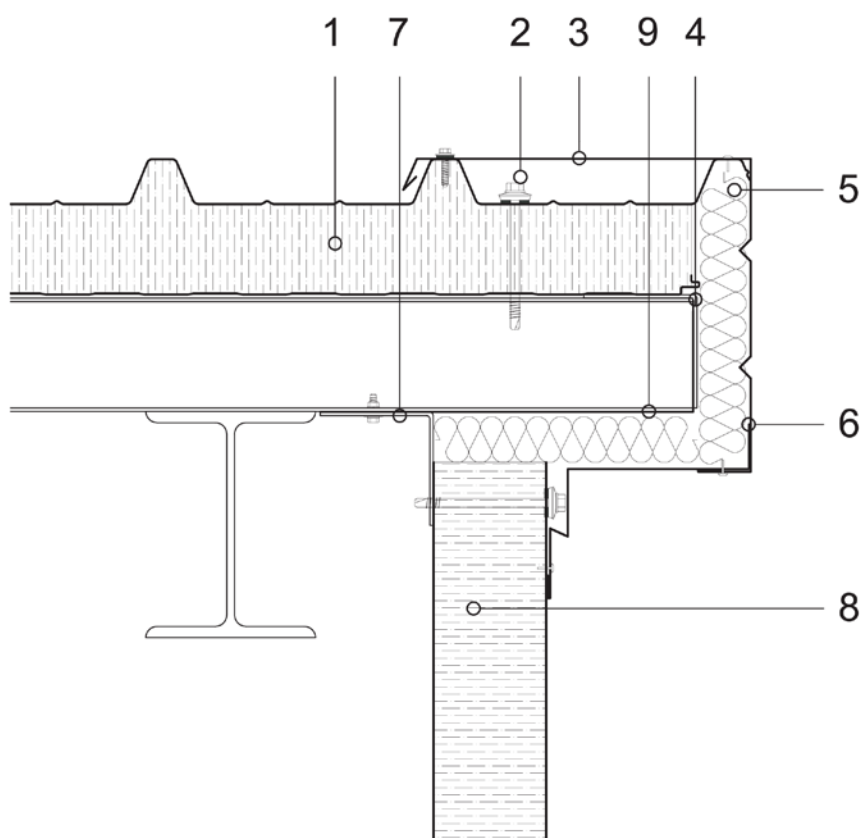
ATTENTION: the proposed solution does not represent a project, and must be examined and assessed prior by the designer or Clerk of Works. The property rights of this document belong exclusively to ISOPAN S.p.A. Reproduction even in part without prior written authorisation by the author is forbidden. To choose the type of fastening, please refer to the screw type choice sheet; To choose the screw length, please refer to the data sheet for the correct screw length.

FLAT ROOF WALL CONNECTION




RPCV 13fw

Roof wall side connection



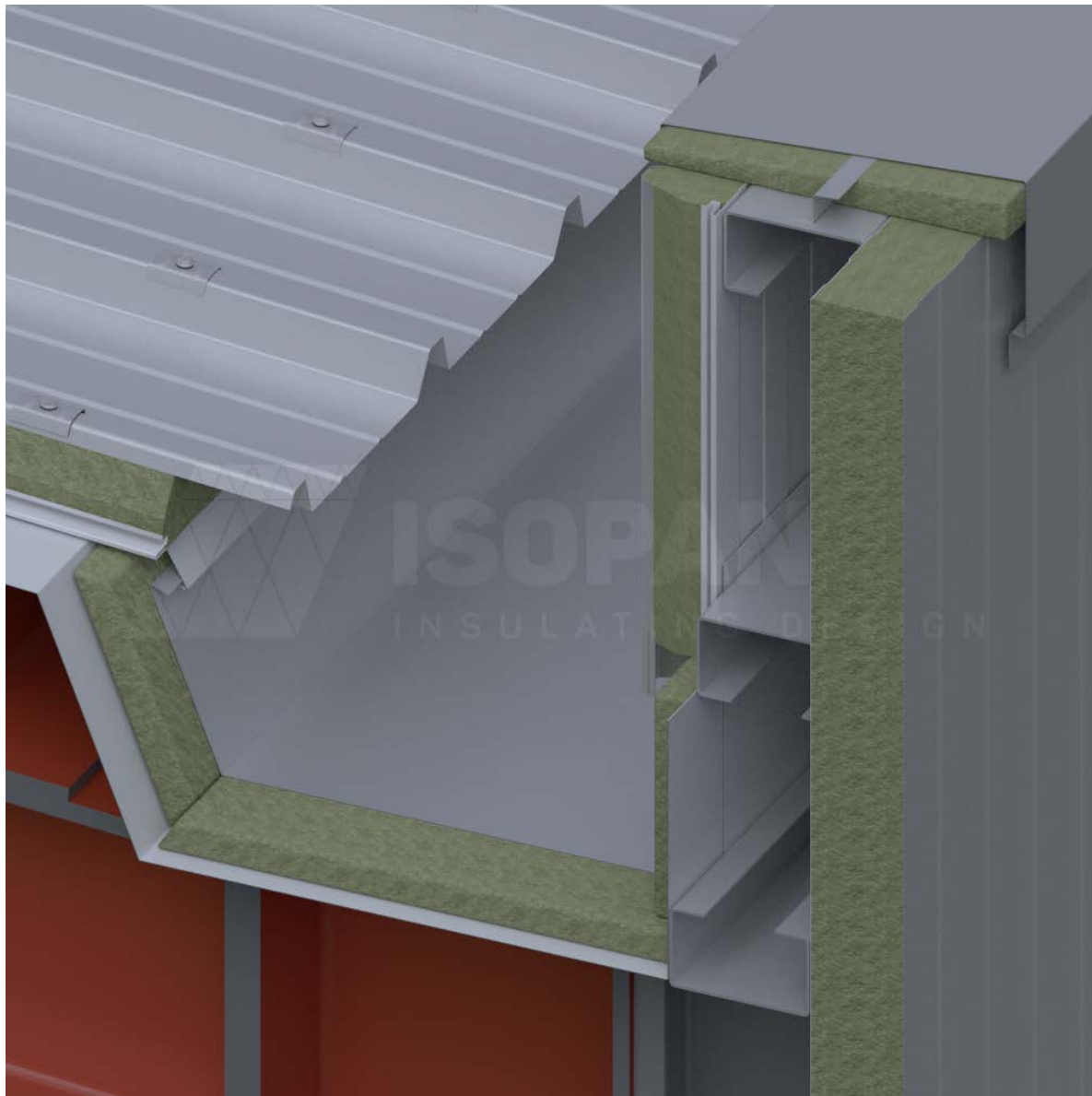
The designer is responsible for assessing the need to insert additional gasket and/or closing elements, even when not indicated in the drawing details.

Key

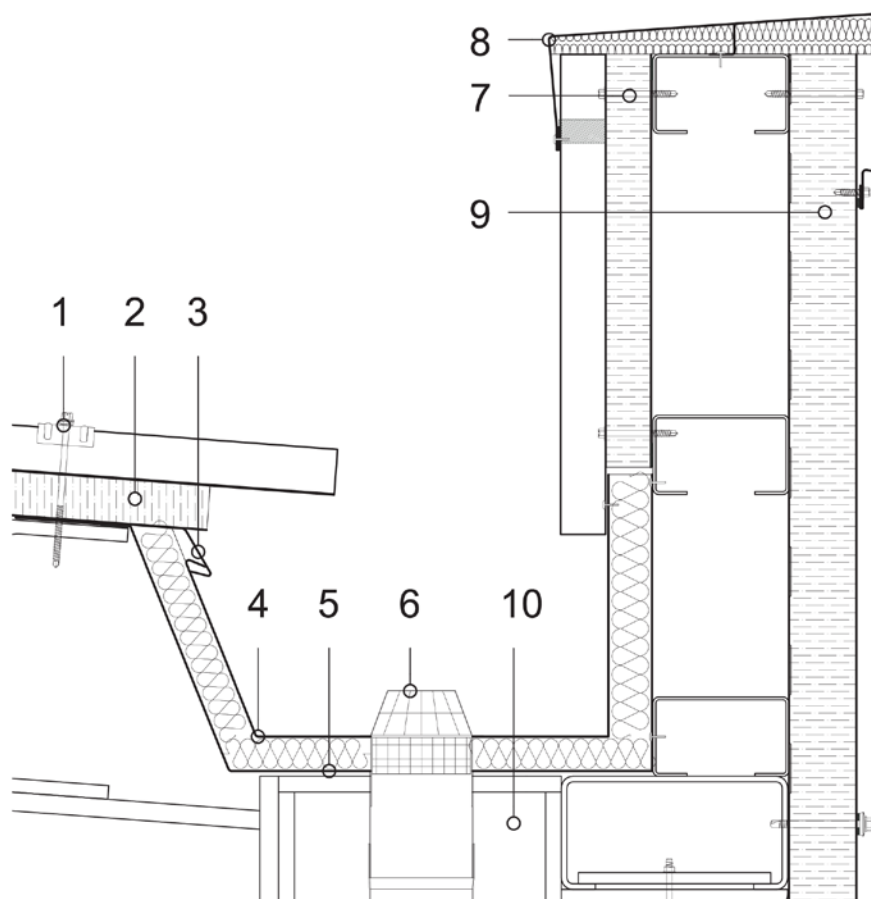
1	ISOPAN mineral wool roof panel
2	Roof panel fastening screw
3	Protective metal sheet
4	L-shaped closing metal sheet
5	Mineral wool insulating material
6	Protective metal sheet
7	Internal closing metal sheet
8	ISOPAN mineral wool wall panel
9	L-shaped closing metal sheet

ATTENTION: the proposed solution does not represent a project, and must be examined and assessed prior by the designer or Clerk of Works. The property rights of this document belong exclusively to ISOPAN S.p.A. Reproduction even in part without prior written authorisation by the author is forbidden. To choose the type of fastening, please refer to the screw type choice sheet; To choose the screw length, please refer to the data sheet for the correct screw length.

ROOF WALL CONNECTION WITH INSULATED GUTTER



Type 4 roof wall connection with insulated gutter



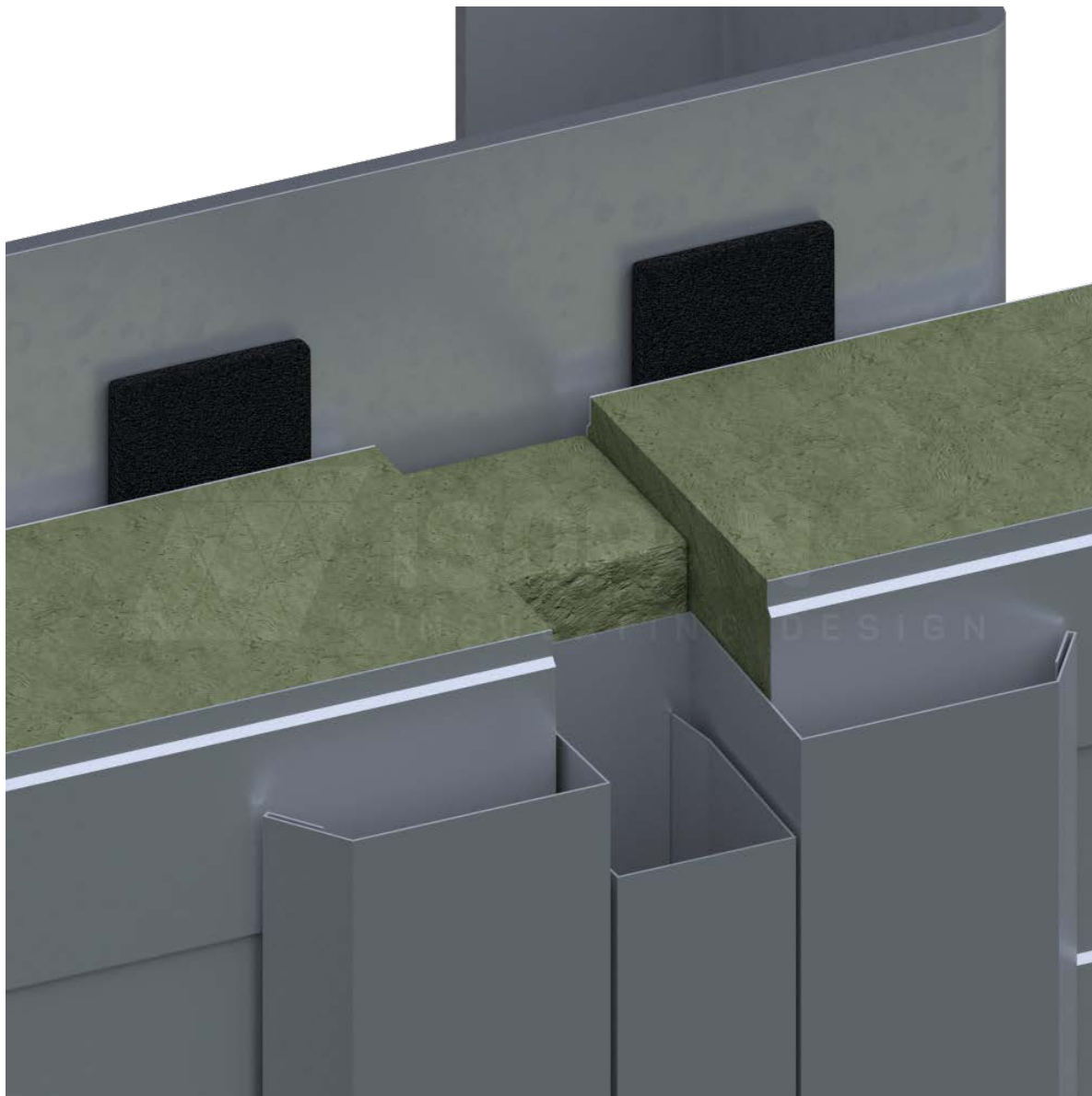
The designer is responsible for assessing the need to insert additional gasket and/or closing elements, even when not indicated in the drawing details.

Key

1	Roof panel fastening unit
2	ISOPAN mineral wool roof panel
3	Drip edge metal sheet
4	Gutter metal sheet
5	Eaves metal sheet
6	Leaf screen
7	Through fastening screw
8	Railing protection metal sheet
9	ISOPAN mineral wool wall panel
10	Main steel structure

ATTENTION: the proposed solution does not represent a project, and must be examined and assessed prior by the designer or Clerk of Works. The property rights of this document belong exclusively to ISOPAN S.p.A. Reproduction even in part without prior written authorisation by the author is forbidden. To choose the type of fastening, please refer to the screw type choice sheet; To choose the screw length, please refer to the data sheet for the correct screw length.

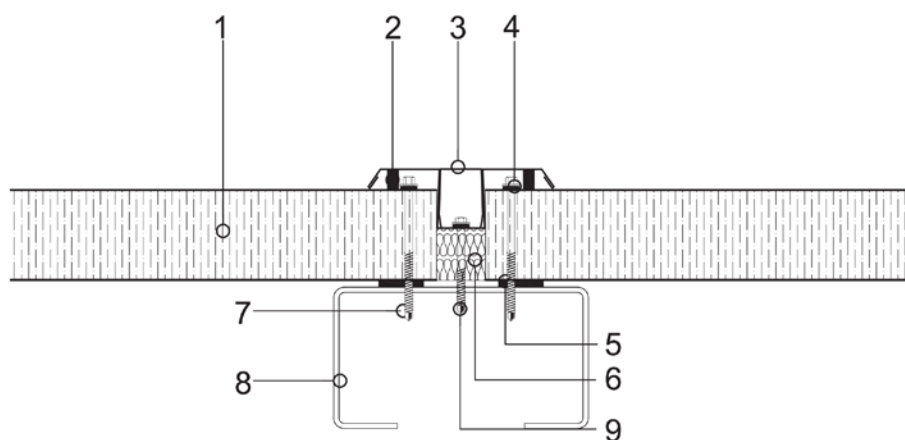
HORIZONTAL BUTT JOINT





SPO 13fw

Type 3 horizontal joint between wall panels



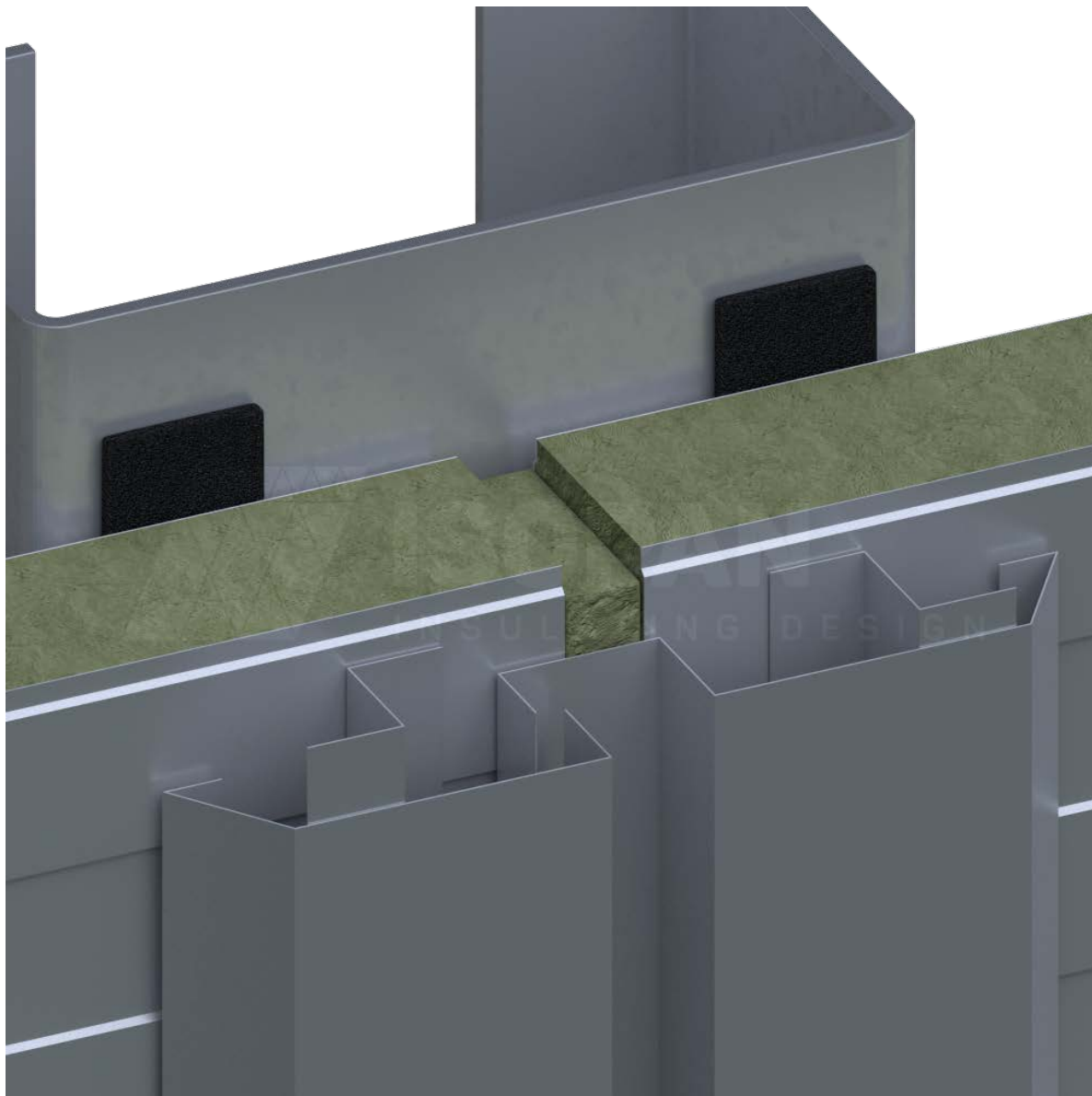
The designer is responsible for assessing the need to insert additional gasket and/or closing elements, even when not indicated in the drawing details.

Key

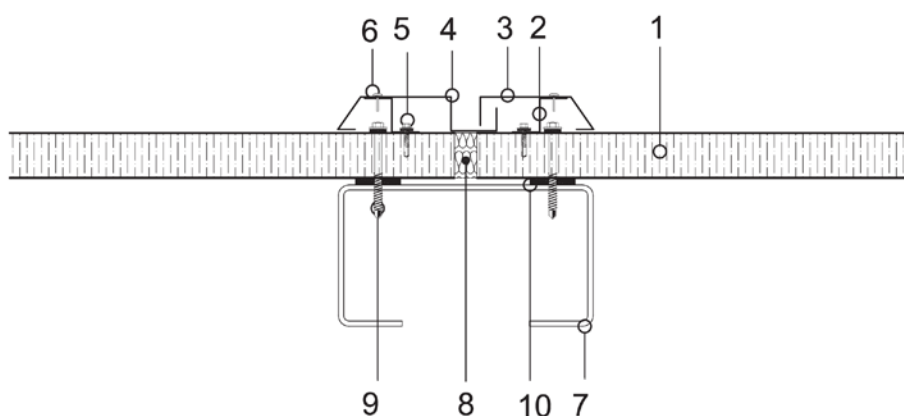
1	ISOPAN mineral wool wall panel
2	Joint connection metal sheet
3	Screw covering metal sheet
4	Rivet
5	EPDM rubber gasket
6	Mineral wool insulating material
7	Panel fastening screws
8	Steel face
9	Metal sheet fastening screw

ATTENTION: the proposed solution does not represent a project, and must be examined and assessed prior by the designer or Clerk of Works. The property rights of this document belong exclusively to ISOPAN S.p.A. Reproduction even in part without prior written authorisation by the author is forbidden. To choose the type of fastening, please refer to the screw type choice sheet; To choose the screw length, please refer to the data sheet for the correct screw length.

HORIZONTAL BUTT JOINT (FOR THERMAL EXPANSION)



Type 5 horizontal joint between wall panels



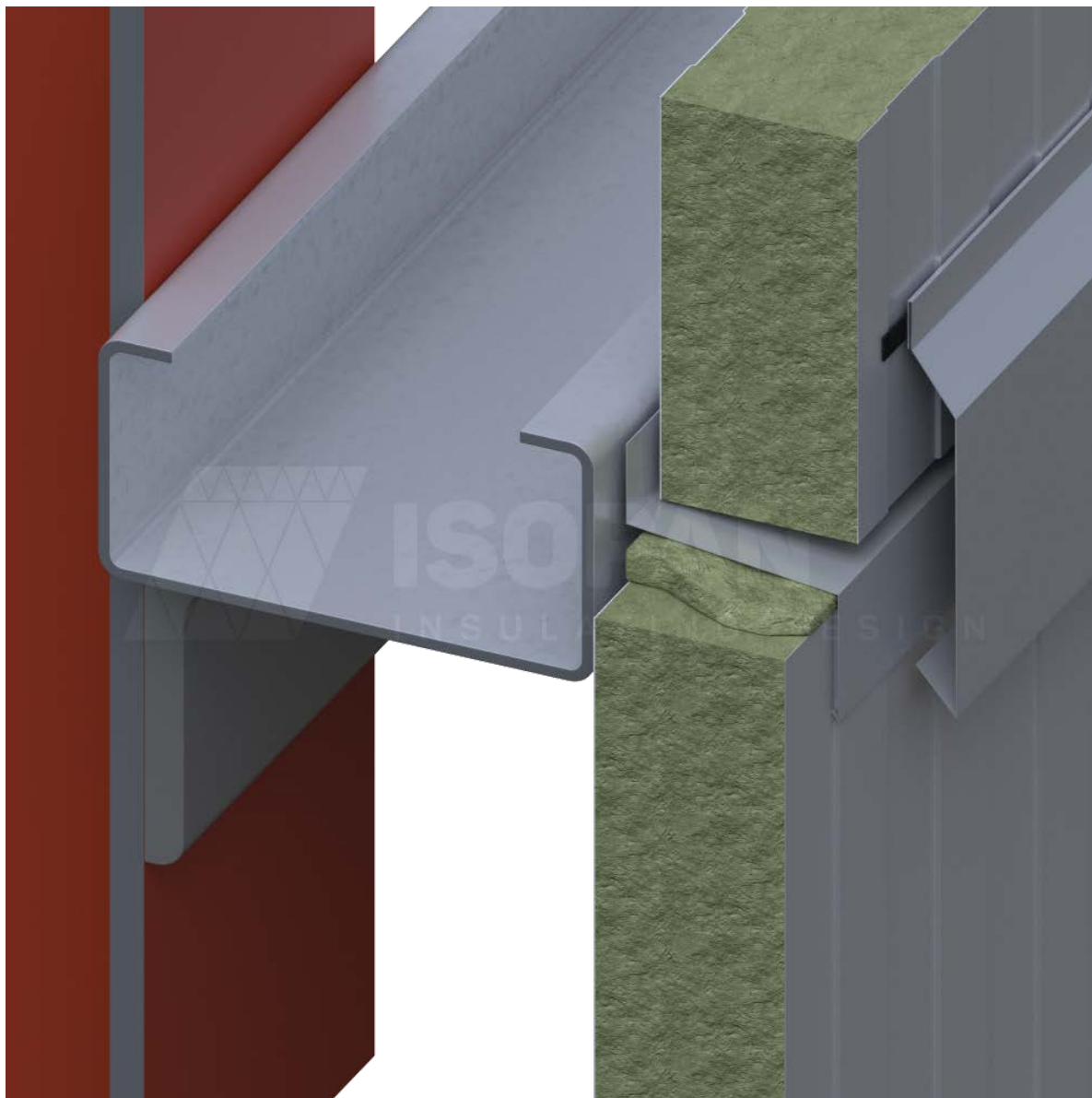
The designer is responsible for assessing the need to insert additional gasket and/or closing elements, even when not indicated in the drawing details.

Key

1	ISOPAN mineral wool wall panel
2	Support metal sheet
3	Joint connection metal sheet
4	Joint connection metal sheet
5	Metal sheet fastening screw
6	Rivet
7	Steel face
8	Mineral wool insulating material
9	Panel fastening screw
10	EPDM rubber gasket

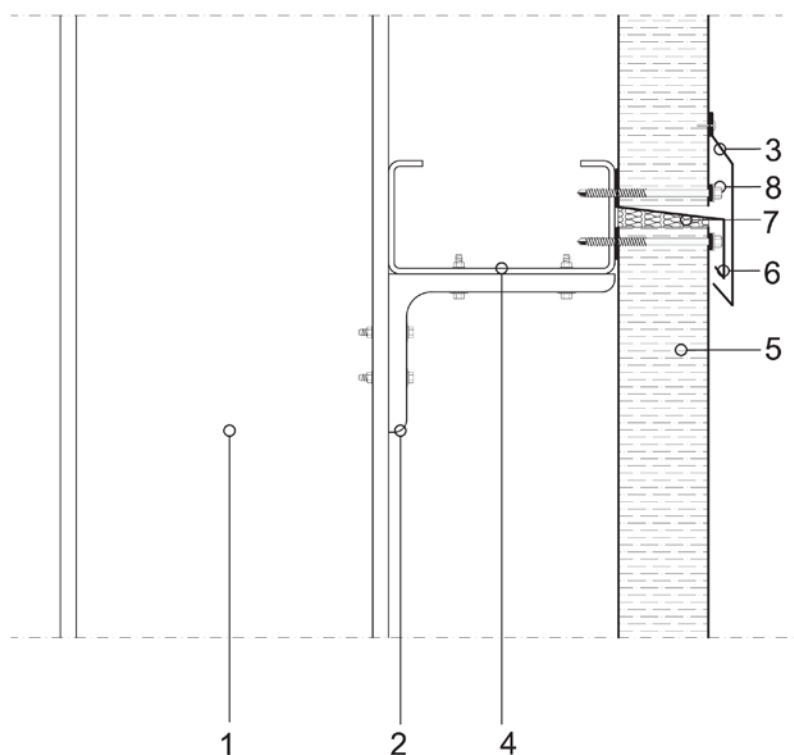
ATTENTION: the proposed solution does not represent a project, and must be examined and assessed prior by the designer or Clerk of Works. The property rights of this document belong exclusively to ISOPAN S.p.a. Reproduction even in part without prior written authorisation by the author is forbidden. To choose the type of fastening, please refer to the screw type choice sheet; To choose the screw length, please refer to the data sheet for the correct screw length.

VERTICAL BUTT JOINT




SPV 17fw

Type 6 steel structure panel hooking



The designer is responsible for assessing the need to insert additional gasket and/or closing elements, even when not indicated in the drawing details.

Key

1	Steel load-bearing structure
2	L-shaped profile
3	Joint protection metal sheet
4	C-shaped press-formed profile
5	ISOPAN mineral wool wall panel
6	Drip edge metal sheet
7	Mineral wool insulating material
8	Panel fastening screw

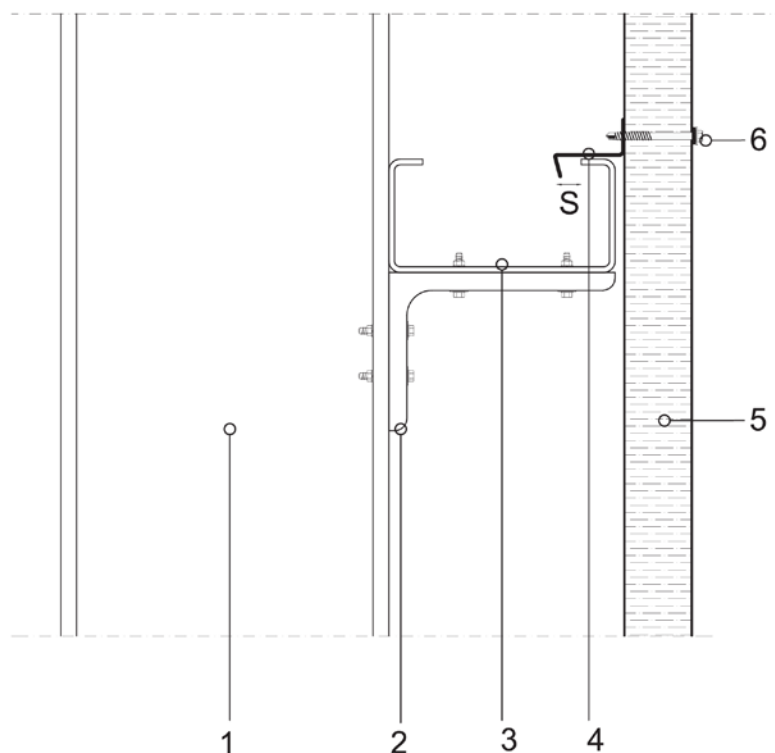
ATTENTION: the proposed solution does not represent a project, and must be examined and assessed prior by the designer or Clerk of Works. The property rights of this document belong exclusively to ISOPAN S.p.a. Reproduction even in part without prior written authorisation by the author is forbidden. To choose the type of fastening, please refer to the screw type choice sheet; To choose the screw length, please refer to the data sheet for the correct screw length.

WALL PANEL FASTENING IN THE EVENT OF THERMAL EXPANSION




SPV 18fw

Wall panel fastening in the event of thermal expansion



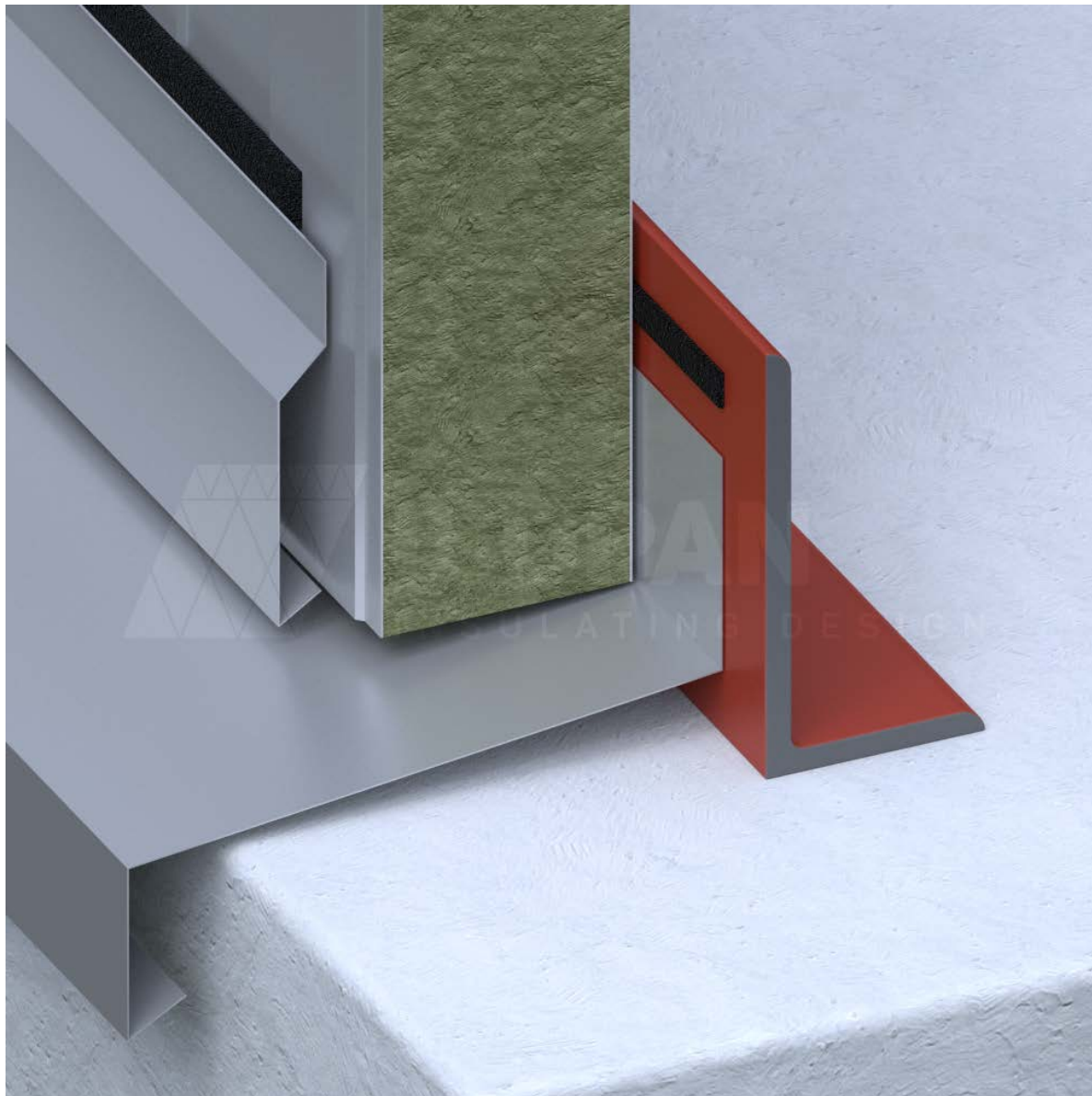
The designer is responsible for assessing the need to insert additional gasket and/or closing elements, even when not indicated in the drawing details.

Key

1	Steel load-bearing structure
2	L-shaped profile
3	Steel C-shaped profile for intermediate support
4	Block profile
5	ISOPAN mineral wool wall panel
6	Fastening screw
S	Compensation clearance for thermal expansion

ATTENTION: the proposed solution does not represent a project, and must be examined and assessed prior by the designer or Clerk of Works. The property rights of this document belong exclusively to ISOPAN S.p.A. Reproduction even in part without prior written authorisation by the author is forbidden. To choose the type of fastening, please refer to the screw type choice sheet; To choose the screw length, please refer to the data sheet for the correct screw length.

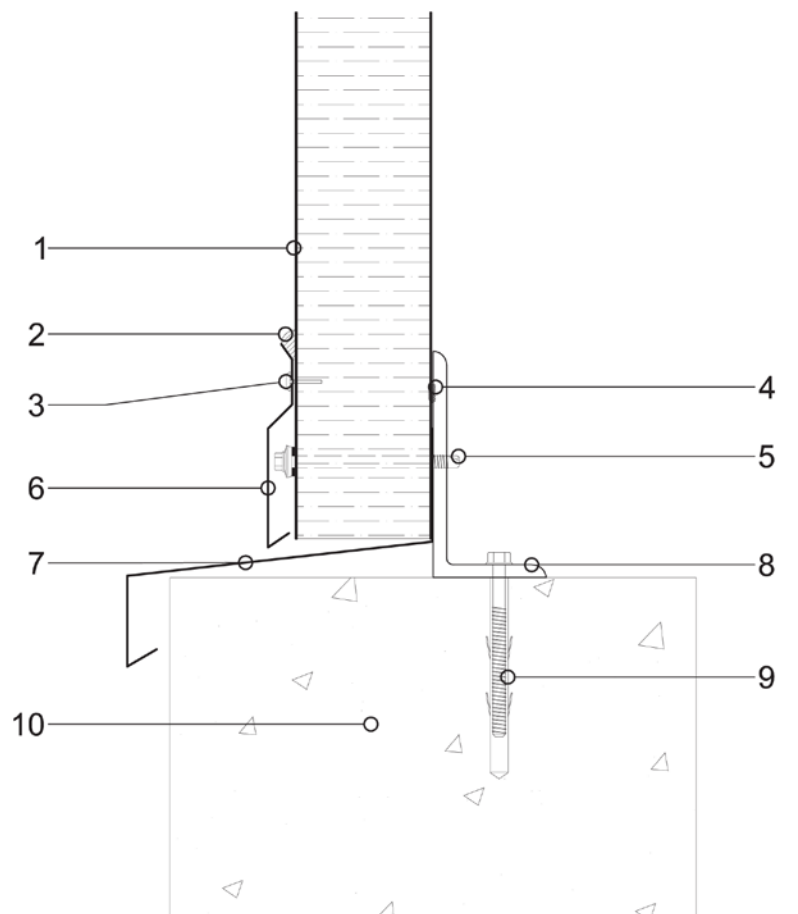
CONCRETE BASE KERB WALL PANEL CONNECTION





SPV 19fw

Type 7 wall panel hooking to concrete structure



The designer is responsible for assessing the need to insert additional gasket and/or closing elements, even when not indicated in the drawing details.

Key

1	ISOPAN mineral wool wall panel
2	Silicone gasket
3	Rivet
4	Adhesive gasket
5	Panel fastening unit
6	Fastening protective tinwork
7	Drip edge tinwork
8	Steel standard L-shaped profile
9	Steel L-shaped face fastening screw
10	Concrete wall

ATTENTION: the proposed solution does not represent a project, and must be examined and assessed prior by the designer or Clerk of Works. The property rights of this document belong exclusively to ISOPAN S.p.A. Reproduction even in part without prior written authorisation by the author is forbidden. To choose the type of fastening, please refer to the screw type choice sheet; To choose the screw length, please refer to the data sheet for the correct screw length.



PART OF
MANNI
GROUP



ISOPAN

INSULATING DESIGN

www.isopan.com



Edition 03/2016

Copyright © - ISOPAN S.p.A.

ITALY

REGISTERED AND ADMINISTRATIVE HQ

Via Augusto Righi 7 |
37135 Verona | Italy
T. +39 045 8088911

ISOPAN SPA

Verona | Italy
T. +39 045 7359111

Frosinone | Italy
T. +39 07752081

WORLD

ISOPAN IBERICA

Terragona | Spain
T. +34 977 52 45 46

ISOPAN EST

Popești Leordeni | Romania
T. +40 21 3051 600

ISOPAN DEUTSCHLAND GmbH

OT Plötz | Germany
T. +49 3460 33220

ISOPAN RUS

Volgogradskaya oblast* | Russia
T. +7 8443 21 20 30

ISOCINDU

Guanajuato | Mexico
+52 1 472 800 7241

SALES OFFICES

ISOPAN FRANCE

Mérignac | France
T. +33 5 56021352

ISOPAN MANNI GROUP CZ

Praha | Czech Republic
contact@isopansendvicovepanely.cz