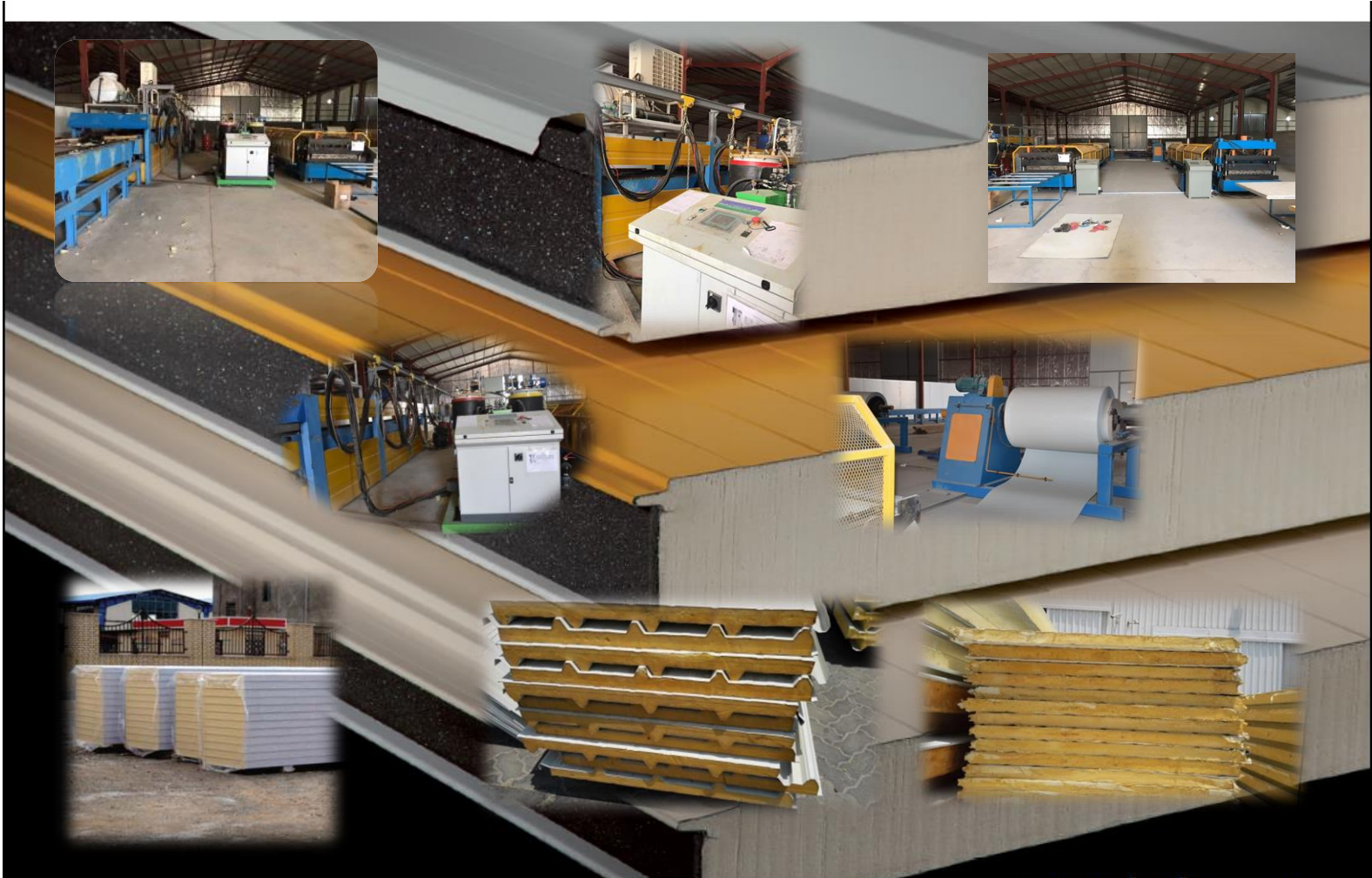


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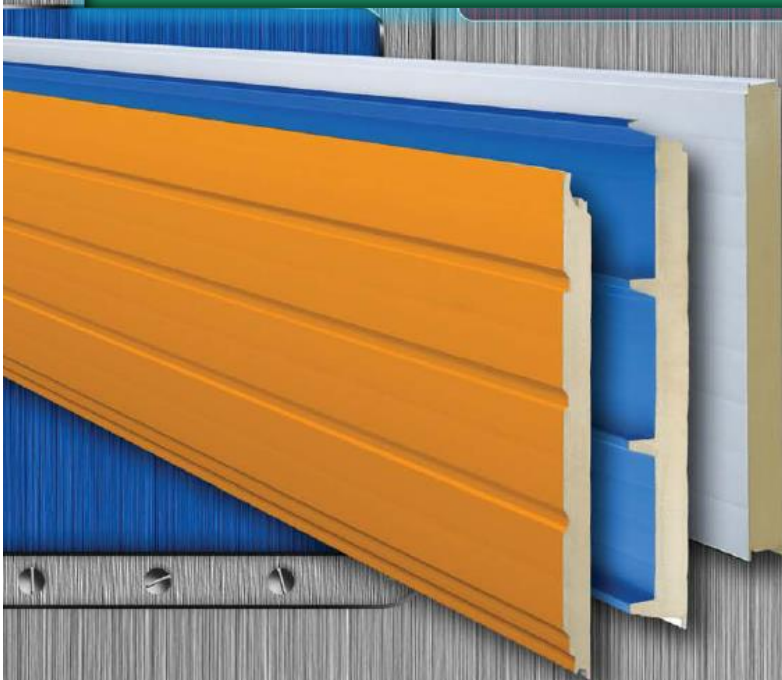
إينفكون (إم) برقة صهيونية إينفكون

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“Insulated panel system for roofs & walls”

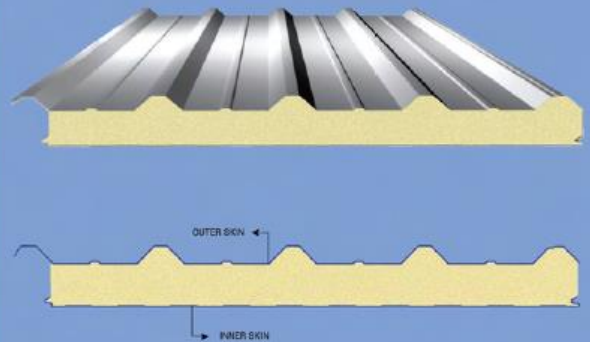


Sandwich Panel is a composite panel consisting of two skins and a polyurethane core. The exposed outer skin is roll formed from steel or aluminium coils, where the inner skin is made up of the same material in addition to an Aluminium foil option.

The outer and inner skins, in case of steel and aluminium coils, are available in different profiles, thickness, coatings and colours to suit the different requirements and exposure conditions in addition to the aesthetic look of the building. The polyurethane core consists of sprayed polyurethane foam (PUR) or the fire retardant polyisocyanurate foam (PIR) with an average density of 40 kg/m³.

The thermal properties of the panels shown in this brochure are based on the average foam thickness, i.e.: excluding the ribs of the corrugation and the contribution of the outer and inner skin. More detailed calculation of the thermal properties can be provided upon request based on the outer and inner skin material and thickness and including the calculation of the thermal properties of the corrugation ribs.

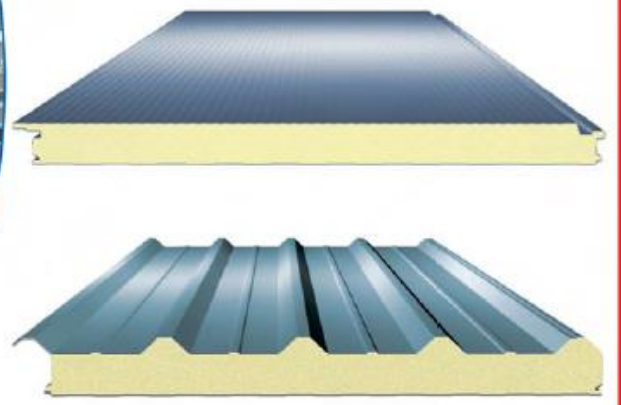
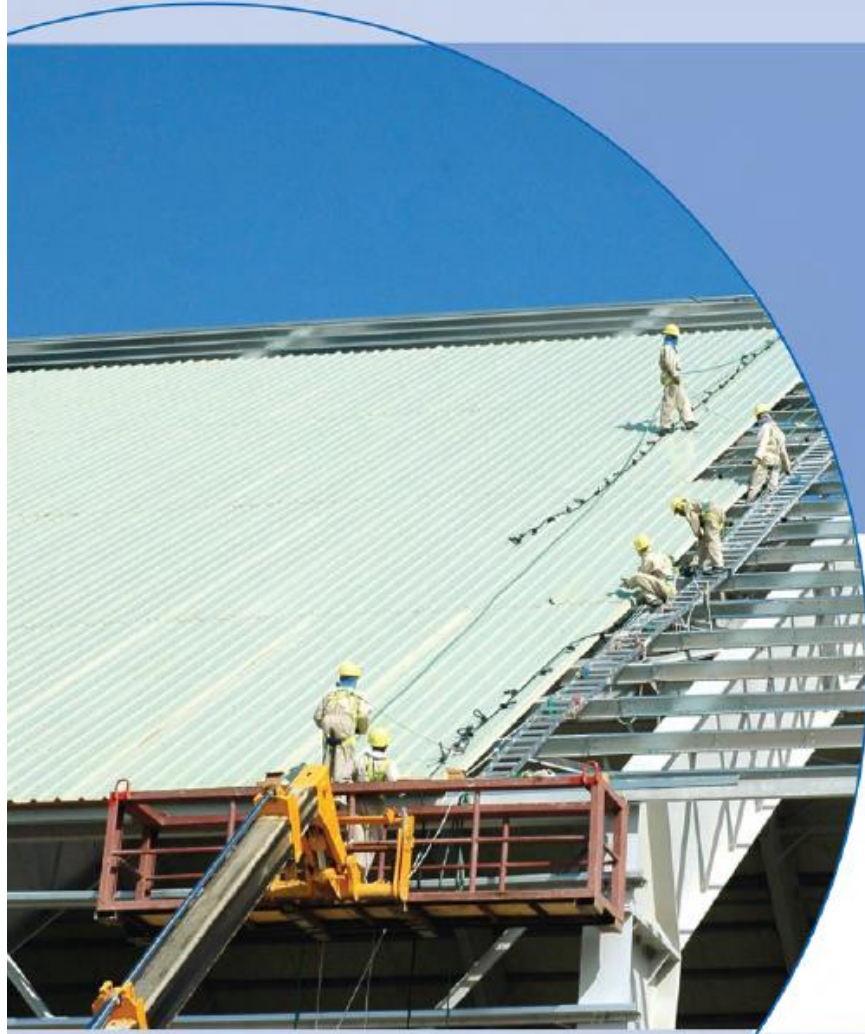
The continual production on double conveyor-belt process adopted by BCOMS is considered as the most innovative process for manufacturing sandwich panels nowadays. The continual production process ensures the best mechanical properties of the insulant due to the strong adhesion of the foaming reaction mixture to both layers of the panel under the influence of heat and free-rise foaming pressure in addition to a considerably higher bending resistance.



Features

- ✓ Excellent thermal insulating properties
- ✓ Cost-efficient processing
- ✓ Chemical and biological resistance
- ✓ Light weight and durable
- ✓ Fast and easy to install
- ✓ Nice aesthetic features
- ✓ High intensity and large rigidity
- ✓ Non-water absorbent
- ✓ Cold and heat resistance
- ✓ Dimensional stability
- ✓ Environmentally friendly.

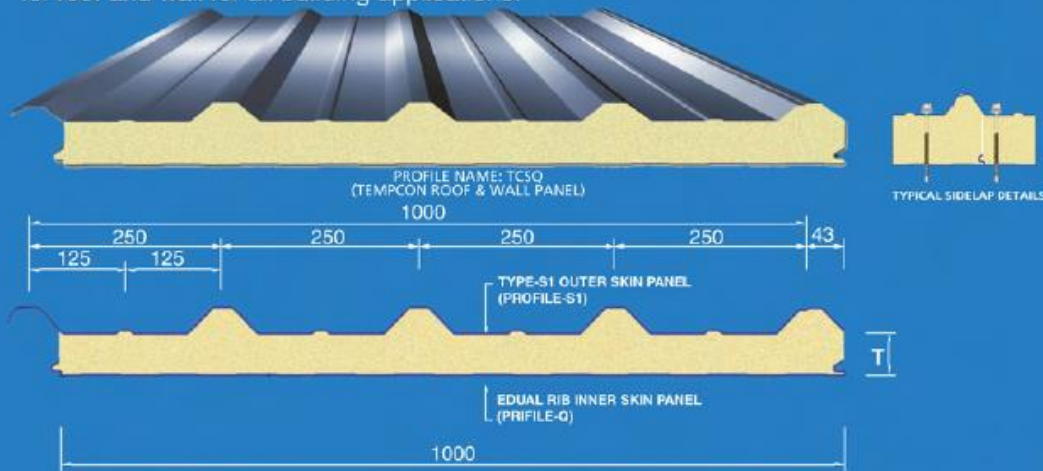
“Insulated panel system for roofs & walls”



TEMPCON PANELS

TEMPCON PANEL

Tempcon sandwich panels are produced using rigid polyurethane foam core with external and internal sheets in steel or aluminum of varying thickness, coatings and colors. Tempcon is a durable sandwich panel, particularly in industrial buildings and are suitable for roof and wall for all building applications.



Dimensions & Thicknesses

Tempcon sandwich panel is available in a single outer profile type in both steel and aluminium in combination of the below listed inner skin types; the insulating core can be produced in various thicknesses and thermal insulation values.

Thermal Properties

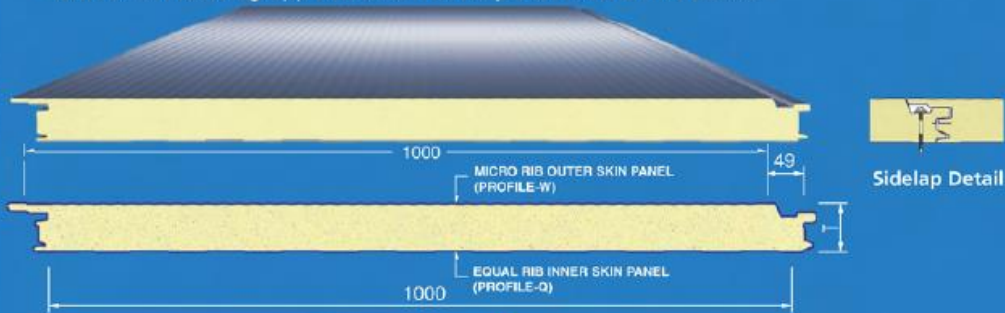
Panel ID	Skin Type		Name Code	Core "T" (mm)	Thermal Transmission U-Value (W/m ² .k)	Thermal Resistance R-Value m ² K/W
TC	Outer Type-S	Inner Equal Rib (Q)	TCSQ-30	30	0.733	1.346
			TCSQ-40	40	0.550	1.818
			TCSQ-50	50	0.440	2.273
			TCSQ-75	75	0.293	3.409
			TCSQ-100	100	0.22	4.545
		Inner Alu-Foil (H)	TCSH-30	30	0.733	1.364
			TCSH-40	40	0.550	1.818
			TCSH-50	50	0.440	2.273
			TCSH-75	75	0.293	3.409
			TCSH-100	100	0.22	4.545

The U-Values in the above table is measured at 25°C and thermal conductivity of K=0.022 KW/m °K

TEMPARCH PANEL

TEMPARCH PANEL

Temparch sandwich panels are produced using rigid polyurethane foam core with external and internal sheets in steel or aluminum of varying thickness, and are suitable for walls for all building applications, interior partition and cold stores.



Dimensions & Thicknesses

Panel	Outer Skin	Inner Skin		Sandwich Panel			
ID	Skin Name	ID	Skin Name	Name – (Thickness)			
TA	Micro Rib W						
		Equal Rib	Q	-	TAWQ-60	TAWQ-75	TAWQ-100
		Aluminium Foil	H	TAWH-40*	TAWH-60	TAWH-75	TAWH-100
Equal Rib	U						
		Equal Rib	Q	-	TAUQ-60	TAUQ-75	TAUQ-100
		Aluminium Foil	H	TAUH-40*	TAUH-60	TAUH-75	TAUH-100
Plain	P						
		Equal Rib	Q	-	TAPQ-60	TAPQ-75	TAPQ-100
		Aluminium Foil	H	TAPH-40*	TAPH-60	TAPH-75	TAPH-100
V - Groove	V						
		Equal Rib	Q	-	TAVQ-60	TAVQ-75	TAVQ-100
		Aluminium Foil	H	TAVH-40*	TAVH-60	TAVH-75	TAVH-100

Note: *- This thickness is available for TEMPARCH Wall Panel with Aluminum Foil only.

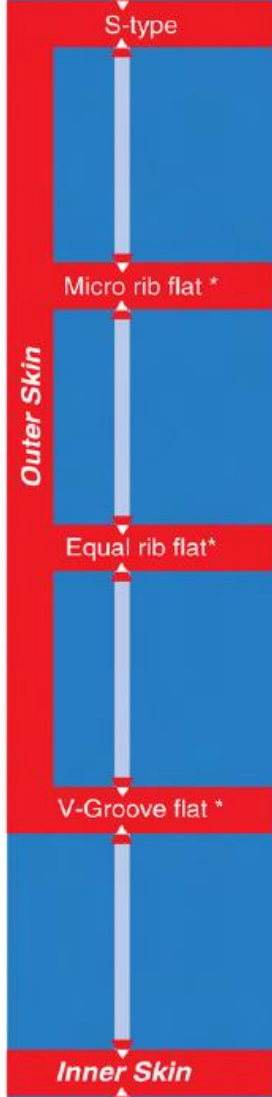
Thermal Properties

Panel Thickness (mm)	Thermal Transmission U-Value W/m ² K	Thermal Resistance R-Value m ² K/W
40	0.550	1.818
60	0.440	2.273
75	0.293	3.409
100	0.22	4.545

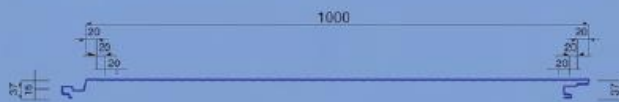
The U-Values in the above table is measured at 25°C and thermal conductivity of K=0.022 KW/m °K

Skin Profiles

The skin types mentioned in all sandwich panel types are shown below to illustrate dimensions in detail.



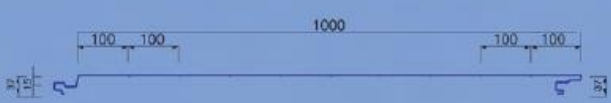
PROFILE NAME: S



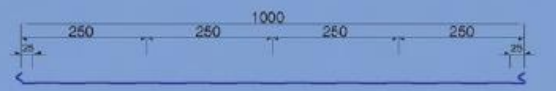
PROFILE NAME: W



PROFILE NAME: U



PROFILE NAME: V



PROFILE NAME: Q

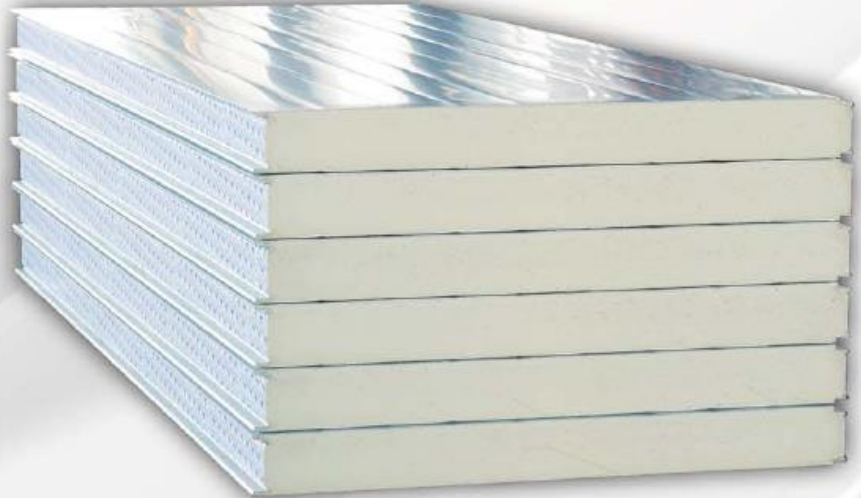
* : These Corrugations can be used for interior skin after consulting our representative.



Sandwich panel

■ In simple language combined rigid polyurethane core between two layers of steel sheet, which is called the sandwich panel. Rigid polyurethane is quite hard and brittle material, so lonely is not very usable.

But with making it like a sandwich between two layers of sheet metal material with high tensile strength which we can achieve a product with the mechanical very good properties.



The most common type of metal used in the present were galvanized sheets, aluminum and aluzinc sheets which were pre-painted, with its composition with polyurethane and manufacture of sandwich panel which can be reached to the product that some of the special characteristics of it is in the following:

- ☀ Good mechanical strength
- ☀ Light weight
- ☀ Resistance to rat and insects and other vermin penetration
- ☀ Lower heat transfer coefficient
- ☀ Fire resistant
- ☀ Reasonable prices
- ☀ Variety of colors
- ☀ Fast and easy to install
- ☀ Low cost installation
- ☀ No need specialized equipment for installation



Applications

■ Sandwich panels produced by this company in terms of consumption items can be divided into two categories

- 1-Constructive sandwich panels
- 2-Refrigeration sandwich panels



Insulating properties of polyurethane sandwich panels is in direct relationship with the production process of a product, which means that adhesion the foam to the sheet and uniformly distributed throughout the product including technical issues that led to making a product with desired properties and this has a direct relationship with production technology.



But the second part of this property is the maintenance after installation of panels to each other that industrial design is an issue related to sandwich panels. Sandwich panels which hasn't each of these properties is not the user's desired results and it will assume the additional costs for energy waste, maintenance and repair facility and

Constructive Sandwich panels

These sandwich panels for walls and ceilings more hangars and warehouses are used. The main priority of applications is the capabilities of quick installation and mechanical properties and exponential shape of the sandwich panel. Therefore, in these products more emphasis on the product design is on how to connect, color, design and beauty.



Refrigeration sandwich panels

These sandwich panels for industrial and commercial use in the fridges are used. In this application, the main use is based on the followings:

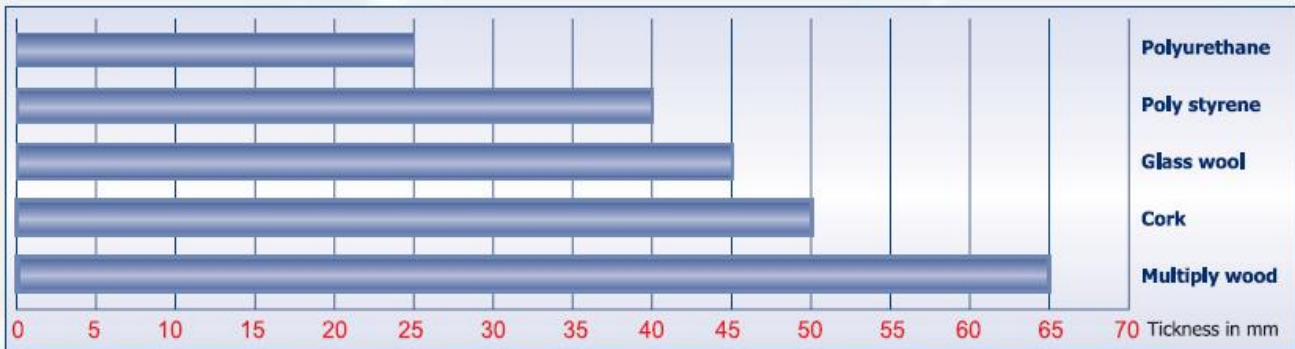
- 1-insulation properties of polyurethane sandwich panel with core rigid.
- 2-seamless connectivity to prevent heat transfer at the connections.
- 3-comfort and ease of installation.



- Due to Mentioned issues the use of this product in commercial and industrial units has grown rapidly.



- In the following chart thickness needed to achieve the same heat transfer coefficient between different materials than rigid polyurethane is shown.

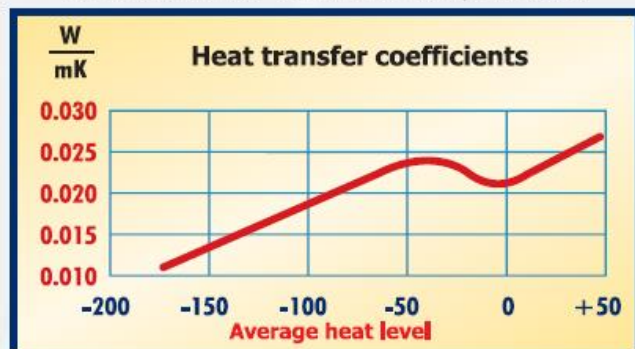


The Table of the rigid polyurethane heat transfer coefficients in different thicknesses

Heat transfer coefficients	
40 mm	0.380 W/m ² K°
50 mm	0.303 W/m ² K°
75 mm	0.244 W/m ² K°
100 mm	0.185 W/m ² K°
125 mm	0.148 W/m ² K°
150 mm	0.119 W/m ² K°

-273 C° = 0 K° = Absolute Zero

Table of the rigid polyurethane heat transfer coefficients at different temperatures

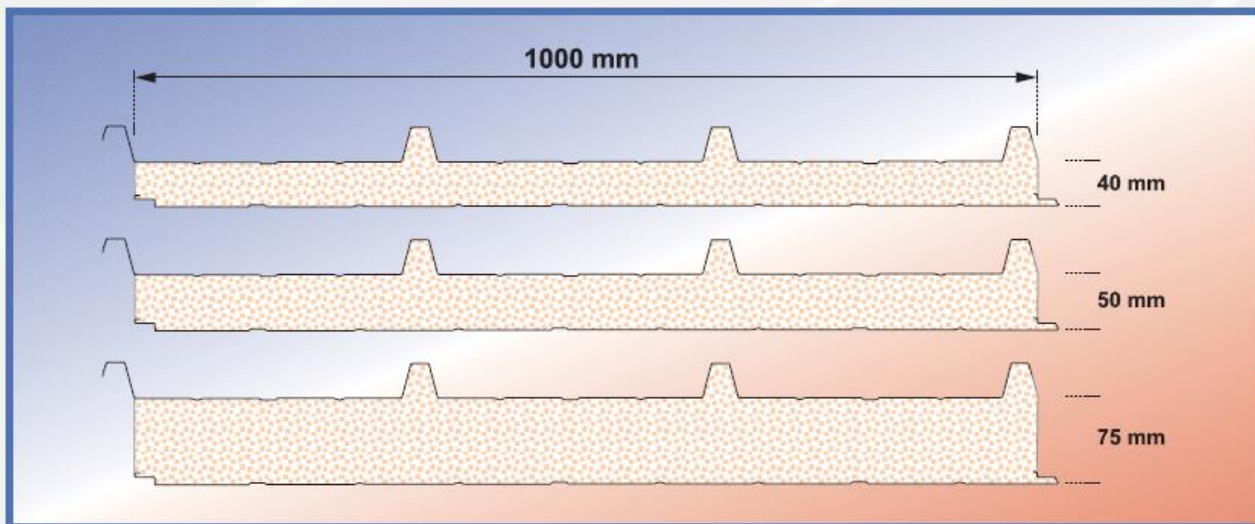


■ Roof Sandwich Panels

This type of sandwich panel is used in structures and used to cover the roofs .



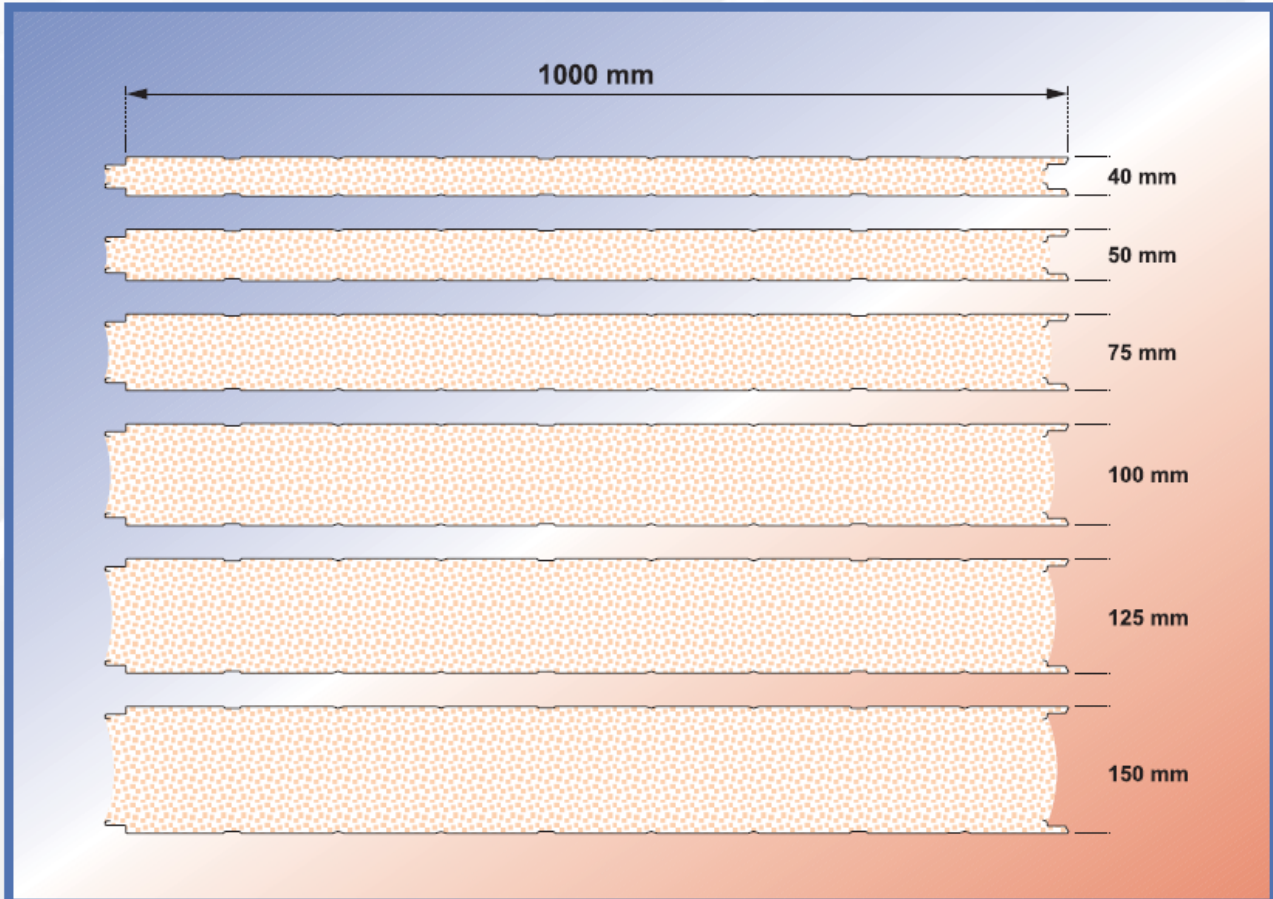
The design of this sandwich panels is in a manner that prevents water penetration during rainfall . This means that when climate is rainfall of the puff of the wind on every side is possible. As can be seen in the image below, especial design of the joint surfaces in this type of panel allows the to minimize infiltration. This panel Also having shadow line to the height of 38 mm as a water channel restrict and transfer the water . Additionally, the shadow line on the panel caused to strengthen the panel resistance in the longitude axis and to prevent of the created wave during the panel . The sandwich panels with respect to the required length and the following thicknesses are produced:



- 1-Roof sandwich panel thickness 40 mm (in the thickness peaks is 78 mm , the density is 40 ± 2)
- 2-Roof sandwich panel thickness 50 mm (in the thickness peaks is 88 mm , the density is 40 ± 2)
- 3-Roof sandwich panel thickness 75 mm (in the thickness peaks is 113 mm , the density is 40 ± 2)

Wall Sandwich Panels

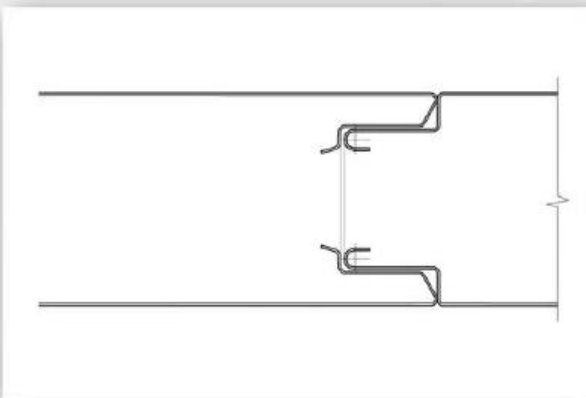
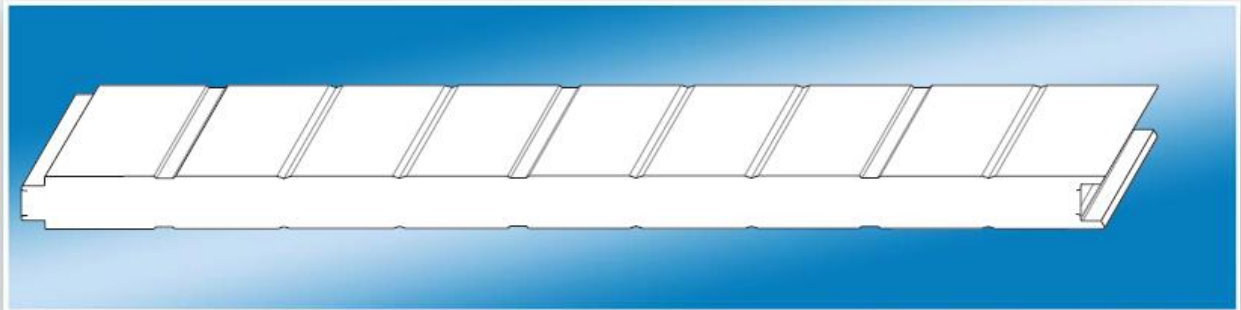
In this graph you can see the profile of these sandwich panels. It should be noted that the sandwich panel in the required and presented length and thickness are produced.



- 1- the wall sandwich panel thickness is 40 mm with double -faced sheet (structural applications and the density is 40 ± 2)
- 2- the wall sandwich panel thickness is 50 mm double -faced sheet (structural applications and the partitions inside the fridges, the density is 40 ± 2)
- 3- the wall sandwich panel thickness is 75 mm double -faced sheet (structural applications and the fridges above zero, the density is 40 ± 2)
- 4- the wall sandwich panel thickness is 100 mm double -faced sheet (special for the fridges with high maintenance above zero and below zero, the density is 40 ± 2)
- 5- the wall sandwich panel thickness is 125 mm double -faced sheet (special for freezing tunnel and the fridges with maintenance below zero, the density is 40 ± 2)
- 6- the wall sandwich panel thickness is 150 mm double -faced sheet (special for freezing tunnel and the fridges with maintenance below zero, the density is 40 ± 2)

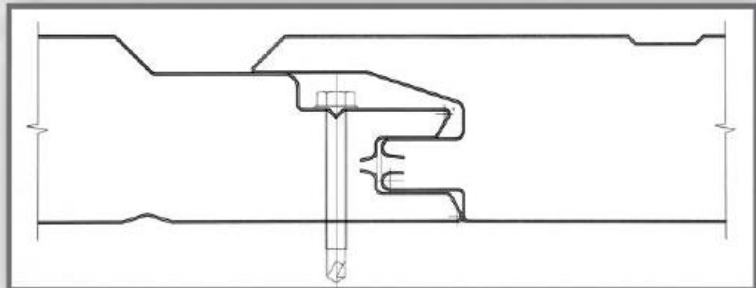
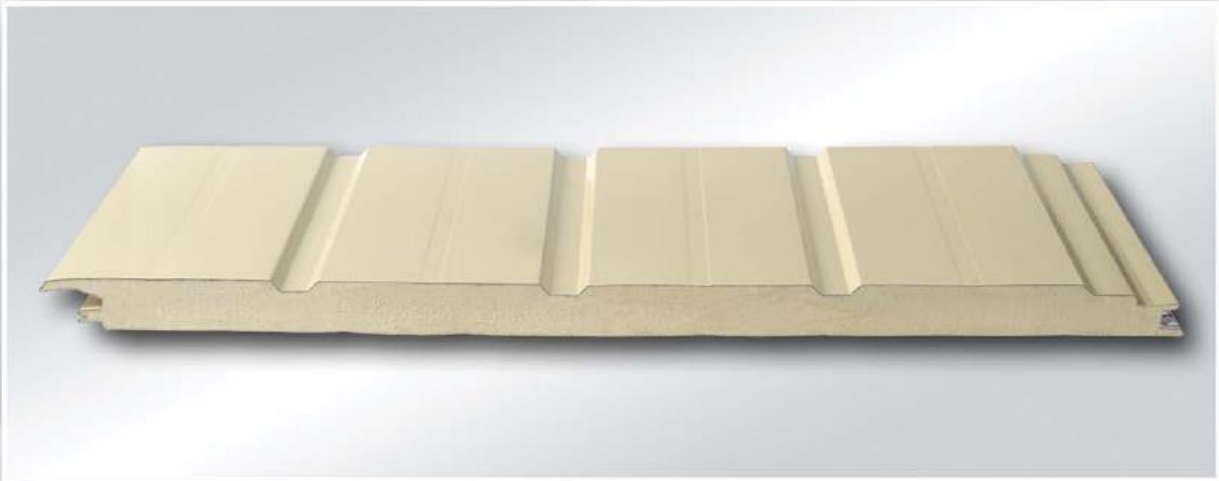
■ Simple & Refrigeration wall sandwich panels

Use of this type of sandwich panels is very extensive. Depending on the thickness of the polyurethane core panel, this panel construction can be used in fridge or constructions.

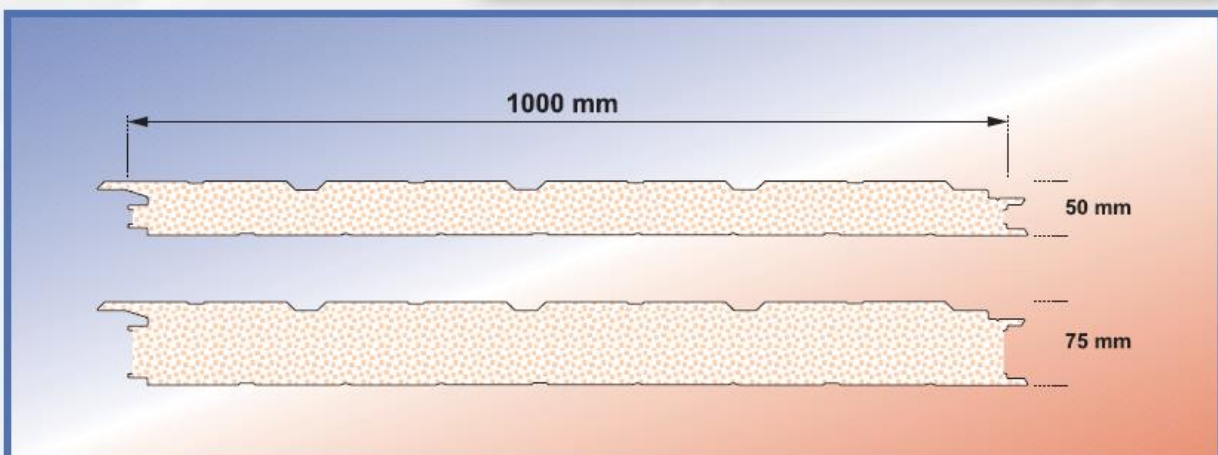


■ Hidden screw sandwich panels

Hidden screw sandwich panels mainly have constructional applications. This type of panel according to the specific structure of the body of it to a simple sandwich wall panels has a greater mechanical strength and due to specific design and structure of the junction of panels to each other, frame and panels connecting bolts is not visible.



The sandwich panels in required length and thickness, are produced in the followings



- 1- The 50 mm sandwich panel with double-faced sheet and hidden bolt (strictional application , the density is 40 ± 2)
- 2- The 75 mm sandwich panel with double-faced sheet and hidden bolt (strictional application , the density is 40 ± 2)

■ Special design of the coldroom sandwich panels

These panels design is such that after installation, the full connection between of rigid polyurethane panel of two pieces nearby each other takes place.

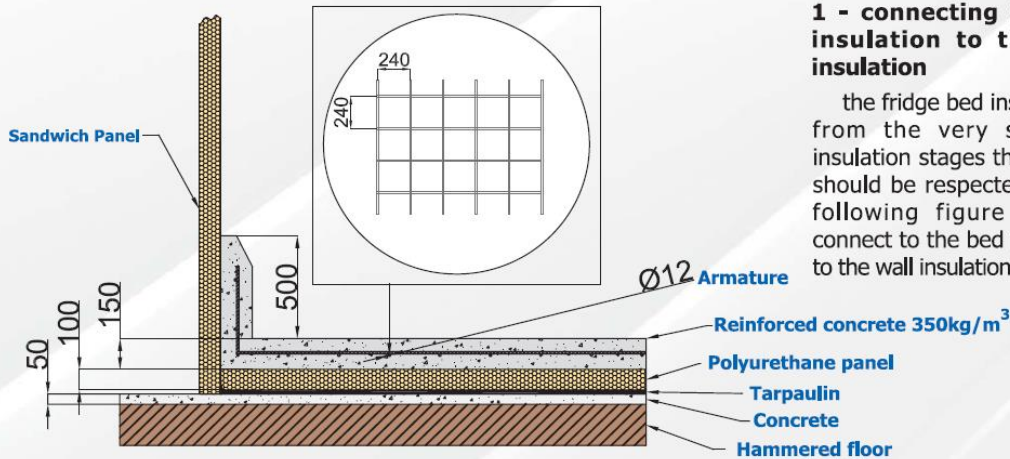


The result of this connection to provide a completely homogenous wall with density of polyurethane material. These advantages in addition to costs removal of the materials injection and projects speed up prevents from appearing heterogeneous surface in the joints due to the lack of the necessary pressure to be happened. Observing this principle, especially in the refrigeration sandwich panels is critical and inevitable. As can be seen in the figure, there is no space between two pieces of adjacent polyurethane sandwich panels .



Installation manual

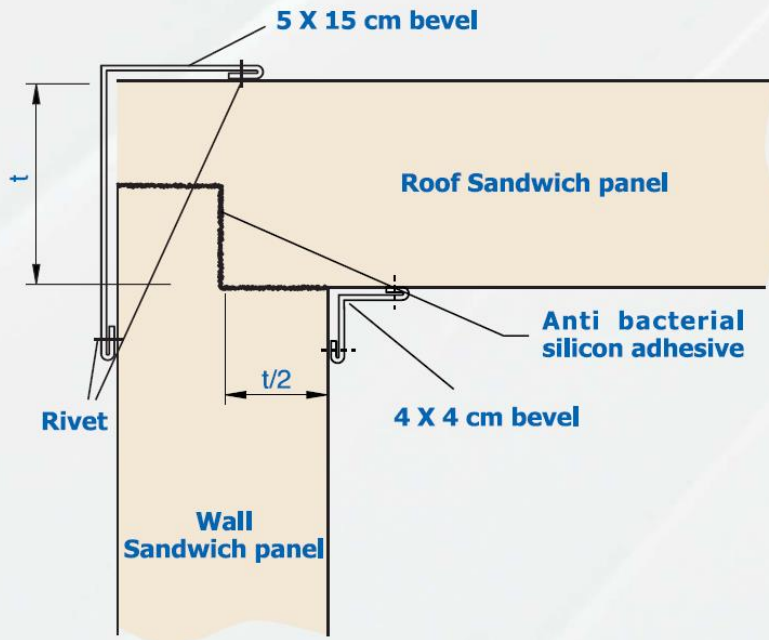
To install the Nobough Sarmayesh sandwich panels is not required a complicated and specialized device, but to avoid downtime and loss of sandwich panels, and competent professionals is recommended. Please note to a few more general points about the installation.



1 - connecting the bed insulation to the wall insulation

the fridge bed insulation is from the very sensitive insulation stages that the lot should be respected. In the following figure how to connect to the bed insulation to the wall insulation is shown.

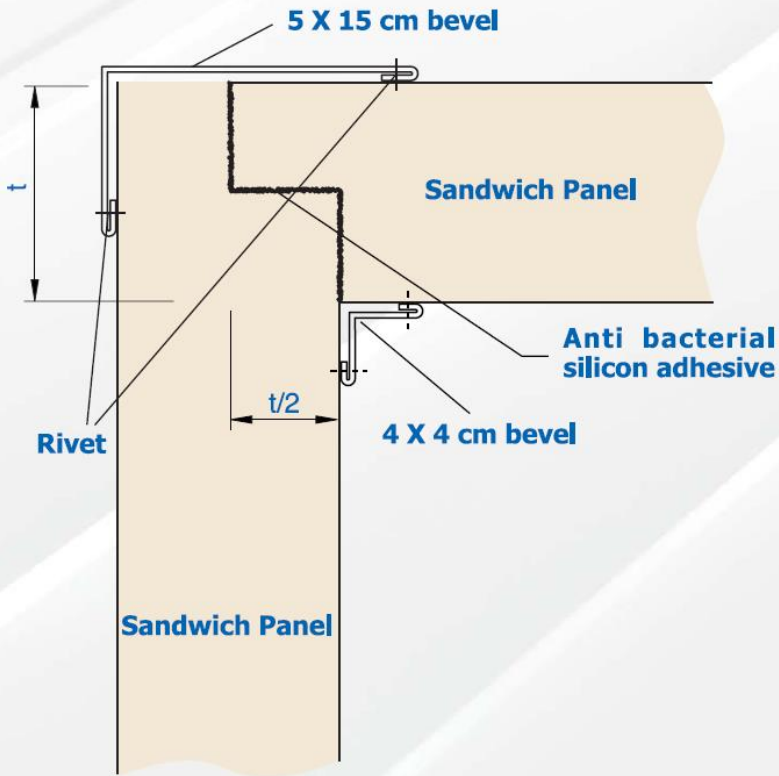
Roof to Wall Connection cross section



2 - connection of the wall panel to the roof panel

Considering that the weight of the ceiling is applied on the walls, roof to wall connections must be such that at the joint, that the roof sandwich panels not to be faulty and simultaneously Ceiling and walls sheets are not connected with the outside.

It should be noted that the length of sandwich panels for roof between 6 and 7 meters are. The lenth more than this amount reduces the strength sandwich panel, leading to a curve that is created.



3 - Connection of the vertical walls on each other

walls perpendicular junction in the corners, of the important points should be considered and the connection must been done so that the metal part of sandwich panels is not associated with outer space.

As you see in the below picture internal sheets had no contact with outside space and thus energy waste will not be.

