

## Isofrigo

Manufactured in: Italy\*, Germany, Spain, Romania  
Foamed Joint is manufactured in Italy



Cold rooms in Verona



Detail of the internal side



EXAMPLES OF PROJECTS

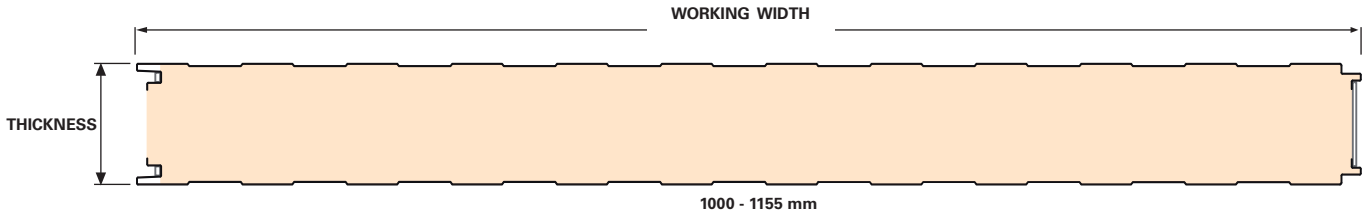




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## PRODUCT INFORMATION

**Self-supporting metal faced panel, insulated with polyurethane, extremely versatile and easy to install. The very high performances of thermal insulation and the excellent quality of the jointing system make it particularly appropriate for constructions that require a controlled temperature.**



## APPLICATION

Isorfrigo is a wall panel designed for cold storage under controlled positive or negative temperatures, for conservation rooms and working rooms.

## CHARACTERISTICS

Isorfrigo is a self-supporting metal faced panel insulated with polyurethane with a tongue-and-groove joint. The fixing elements are exposed and placed on the prepared zone on the edge.

## ADVANTAGES

- High thermal resistance
- Mechanical stability
- Large modularity
- Quick to install
- Dimensional stability, lightness
- Surfaces easy to clean
- Project flexibility



### INSTRUCTIONS OF USE

For the use of the panels and the related limits, please consult the technical data sheet available on [www.isopan.it](http://www.isopan.it) under the section "technical data sheet" and the "recommendations for the assembly of ribbed sheets and metal faced insulating panels" defined by AIPPEG Association of Italian Producers of Panels and Ribbed Elements.

### PANELS WEIGHT

SHEET mm		PANEL NOMINAL THICKNESS mm					
		80	100	120	150	180	200
0,5	kg/m <sup>2</sup>	11,2	12	12,8	14	15,2	16,4
0,6	kg/m <sup>2</sup>	12,9	13,7	14,5	15,7	16,9	17,7

### DIMENSION TOLERANCE (in accordance with EN 14509)

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

*L means the length, D means the panels thickness and F means the sheets mating.*

OVERLOAD SPANS

STEEL SHEET 0.5 mm – support 120 mm												
UNIFORMLY DI-DISTRIBUTED LOAD	PANEL NOMINAL THICKNESS mm						PANEL NOMINAL THICKNESS mm					
	80	100	120	150	180	200	80	100	120	150	180	200
kg/m <sup>2</sup>	MAX SPANS cm						MAX SPANS 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 SHEET 0.6 mm – support 120 mm												
UNIFORMLY DI-DISTRIBUTED LOAD	PANEL NOMINAL THICKNESS mm						PANEL NOMINAL THICKNESS mm					
	80	100	120	150	180	200	80	100	120	150	180	200
kg/m <sup>2</sup>	MAX SPANS cm						MAX SPANS cm					
50	560	650	760	850	960	980	660	760	850	920	940	970
60	520	610	700	820	930	950	590	660	790	880	900	925
80	440	530	610	720	820	890	510	600	660	810	850	860
100	390	470	540	640	730	800	440	530	610	710	720	740
120	360	420	490	580	660	730	390	470	540	620	650	660
140	320	390	450	530	620	660	350	430	500	550	560	560
160	300	360	410	500	570	620	320	390	450	490	500	500
180	270	330	380	460	530	580	290	350	420	440	450	450
200	250	310	360	430	500	550	280	330	390	400	400	400

Calculation for static sizing according to the Annex E of the UNI EN 14509 standard  
Deflection limit 1/200 ℓ

THERMAL INSULATION

In accordance with the new standard EN 14509 Annex 10

U	PANEL NOMINAL THICKNESS mm					
	80	100	120	150	180	200
W/m <sup>2</sup> K	0,27	0,22	0,18	0,15	0,12	0,11
kcal/m <sup>2</sup> h °C	0,23	0,19	0,16	0,13	0,11	0,09

According to the calculation method EN ISO 69646

K	PANEL NOMINAL THICKNESS mm					
	80	100	120	150	180	200
W/m <sup>2</sup> K	0,26	0,21	0,18	0,14	0,12	0,11
kcal/m <sup>2</sup> h °C	0,23	0,18	0,15	0,12	0,10	0,09

AVAILABLE COLOURS (the colour should be chosen according to the final-use, the installation area and the standard thicknesses in stock)

bianco grigio 	bianco G9002 	bianco G9010 	avorio chiaro G1015 	giallo cadmio RAL1021 
blu genziana G5010 	silver G9006 	verde muschio G6005 	verde oliva G6003 	rosso fuoco G3000 



## Guide to chose the panel

The cold rooms and rooms for conservation and storage of foods can be so called positive and negative. Generally the first ones with temperatures till  $-1^{\circ}\text{C}$  and the second ones till  $-25^{\circ}\text{C}$ . Depending on the temperature to maintain inside the room, a certain type of joint should be used :



Appropriate for rooms with temperatures not below to  $+4^{\circ}\text{C}$ , for the conservation of foods where a major temperature change does not require an adequate airtightness.



Appropriate for rooms where foods are processed, maintaining the temperature till  $-1^{\circ}\text{C}$ , where a major temperature change does not require an adequate airtightness



Appropriate for rooms where finished products are stored; the temperature is not below to  $-8^{\circ}\text{C}$ . These rooms must be well insulated and a greater airtightness is required, thanks to an adequate joint.

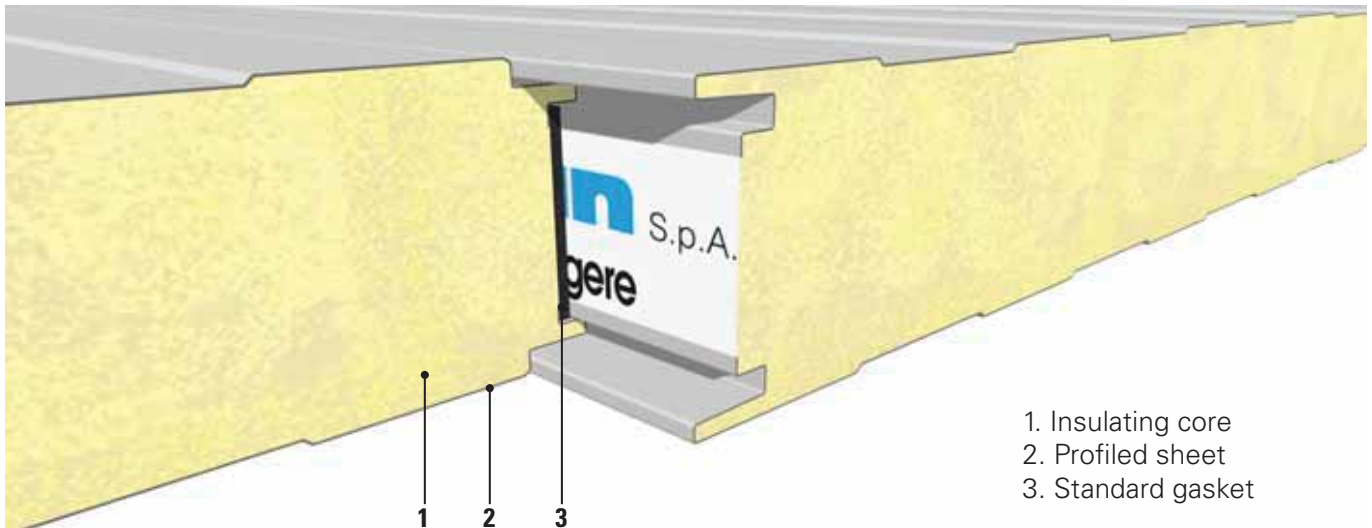


Particularly adapted for rooms where frozen products are stored with temperatures till  $-28^{\circ}\text{C}$  and rooms that impose constraining requirements in terms of minimisation of thermal bridges and air permeability.

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

# Dry joint

The dry joint solution is economically the most profitable as it does not require any processing on site; the Isofrigo panel, in fact, is already equipped with PVC gaskets and this speeds up the assembly phase.



- 1. Insulating core
- 2. Profiled sheet
- 3. Standard gasket

## USE

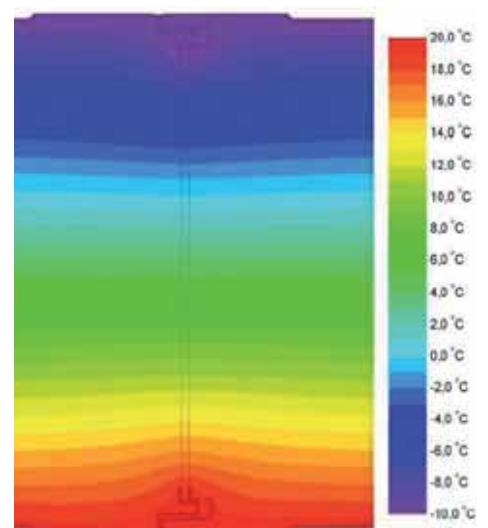
Adapted for rooms with temperature not below to +4°C.

## AIRTIGHTNESS ( 1 Pa ≈ 0,1 kg/m<sup>2</sup> )

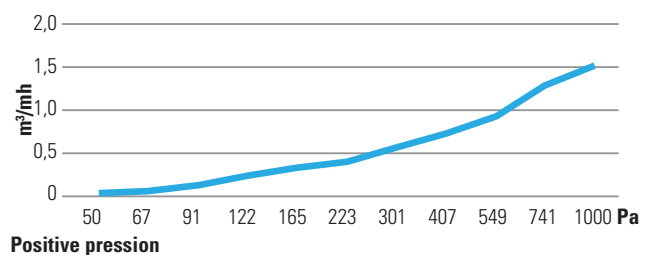
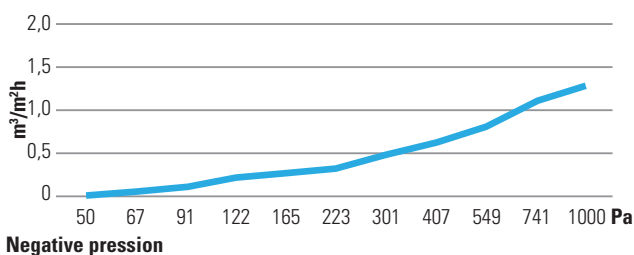
POSITIVE PRESSION Pa	AIR PERMEABILITY	
	m <sup>3</sup> / m <sup>2</sup> h ( 1000 mm )	m <sup>3</sup> / m <sup>2</sup> h ( 1155 mm )
50	0,02	0,02
67	0,05	0,04
91	0,12	0,10
122	0,23	0,20
165	0,30	0,26
223	0,37	0,32
301	0,53	0,46
407	0,70	0,61
549	0,91	0,79
741	1,25	1,08
1000	1,48	1,28

NEGATIVE PRESSION Pa	AIR PERMEABILITY	
	m <sup>3</sup> / m <sup>2</sup> h ( 1000 mm )	m <sup>3</sup> / m <sup>2</sup> h ( 1155 mm )
50	0,01	0,01
67	0,04	0,03
91	0,11	0,10
122	0,19	0,16
165	0,27	0,23
223	0,33	0,29
301	0,39	0,34
407	0,55	0,48
549	0,67	0,58
741	0,91	0,79
1000	1,09	0,94

## HEAT LOSS IN THE JOINT: Uf = 0,156 W/m<sup>2</sup> K



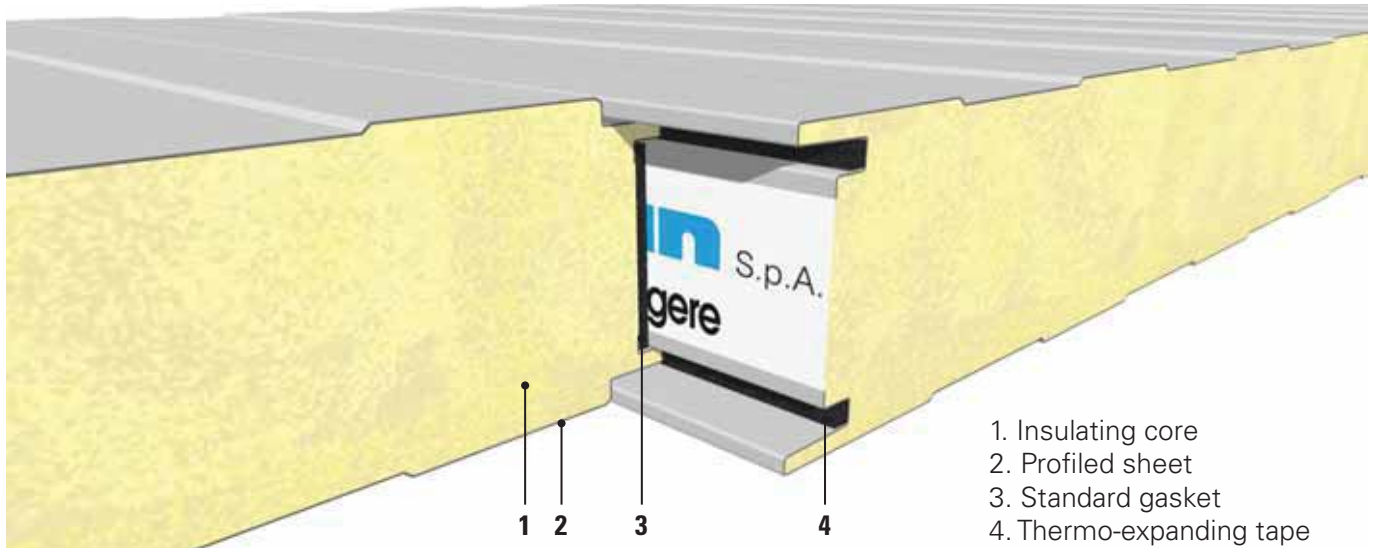
## AIR PERMEABILITY



1000 Pa ≈ 100 kg/m<sup>2</sup>

# Joint with thermo-expanding tape

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



### USE

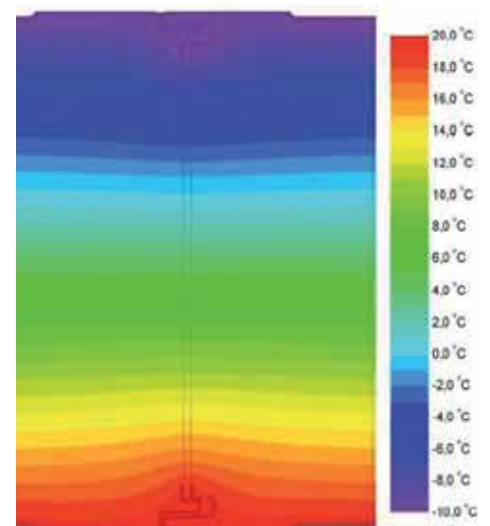
Adapted for all temperatures also below to -1°C.

### AIRTIGHTNESS ( 1 Pa ≈ 0,1 kg/m<sup>2</sup> )

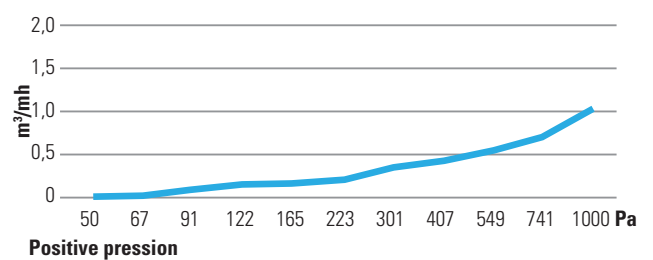
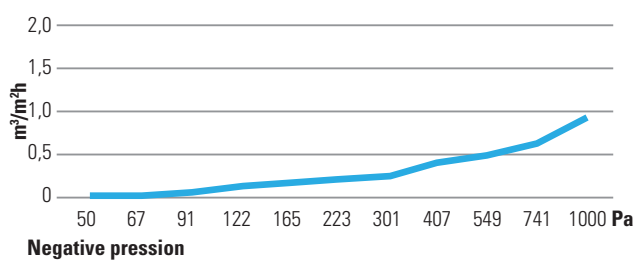
POSITIVE PRESSION Pa	AIR PERMEABILITY	
	m <sup>3</sup> / m <sup>2</sup> h ( 1000 mm )	m <sup>3</sup> / m <sup>2</sup> h ( 1155 mm )
50	0,01	0,01
67	0,03	0,03
91	0,07	0,06
122	0,13	0,11
165	0,17	0,15
223	0,20	0,17
301	0,32	0,28
407	0,42	0,36
549	0,51	0,44
741	0,68	0,59
1000	1,03	0,89

NEGATIVE PRESSION Pa	AIR PERMEABILITY	
	m <sup>3</sup> / m <sup>2</sup> h ( 1000 mm )	m <sup>3</sup> / m <sup>2</sup> h ( 1155 mm )
50	0,01	0,01
67	0,03	0,03
91	0,05	0,04
122	0,12	0,10
165	0,15	0,13
223	0,18	0,16
301	0,25	0,22
407	0,33	0,29
549	0,38	0,33
741	0,49	0,42
1000	0,72	0,62

HEAT LOSS IN THE JOINT:  $U_f = 0,145 \text{ W/m}^2 \text{ K}$



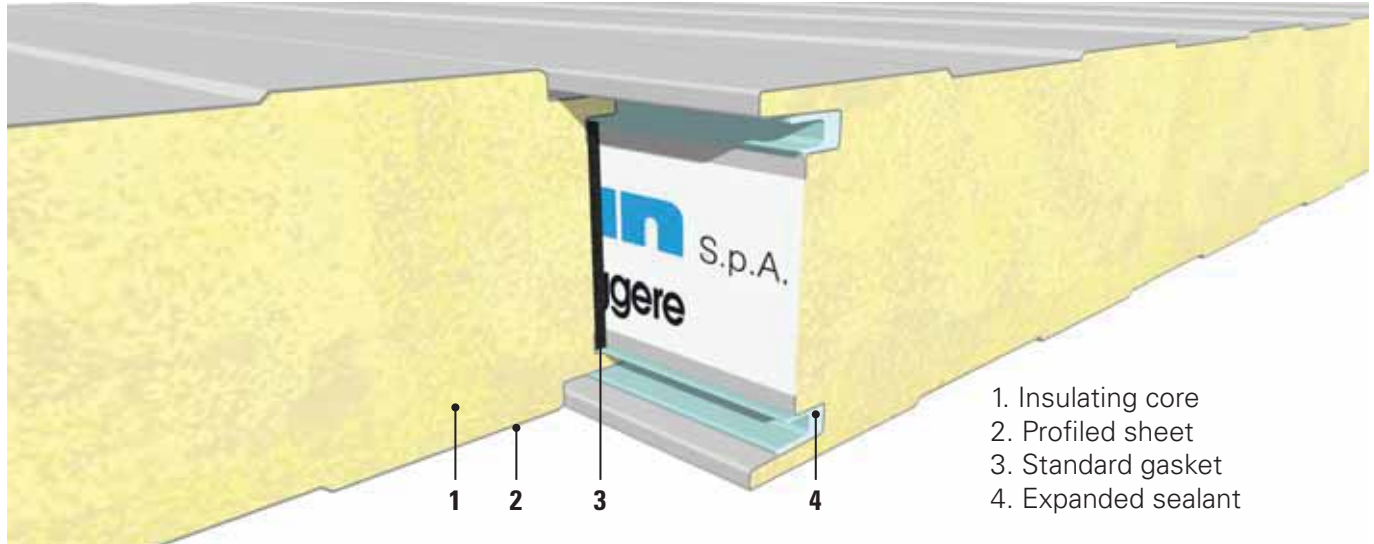
### AIR PERMEABILITY



1000 Pa ≈ 100 kg/m<sup>2</sup>

# Joint with expanding thixotropic sealant

The airtightness is excellent, thanks to the lack of cracks guaranteed by the expanding sealant, whose thixotropic characteristic offers an excellent airtightness without impacting on the assembly easiness. A major advantage of the system is its cost advantage, to make it more worthwhile than the “foamed joint” solution, because there is less material used and the installation is faster.



- 1. Insulating core
- 2. Profiled sheet
- 3. Standard gasket
- 4. Expanded sealant

## USE

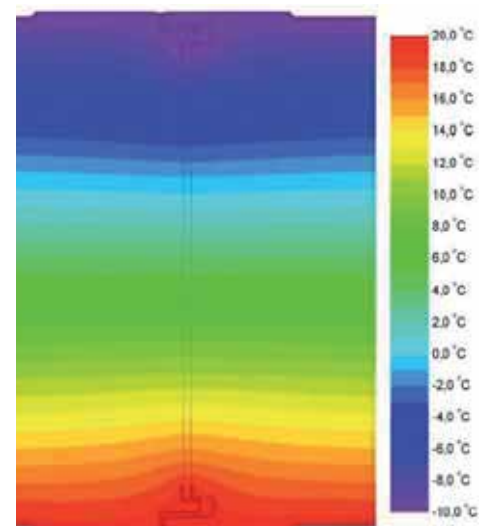
Adapted for all temperatures also below to -8°C.

## AIRTIGHTNESS (1 Pa = 0,1 kg/m<sup>2</sup>)

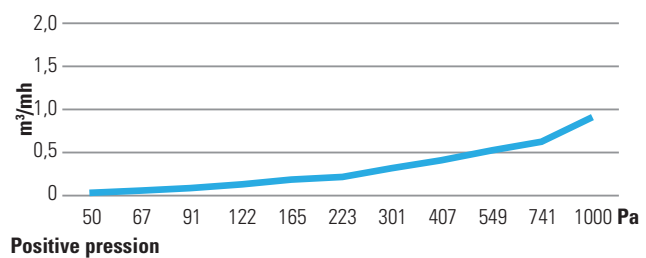
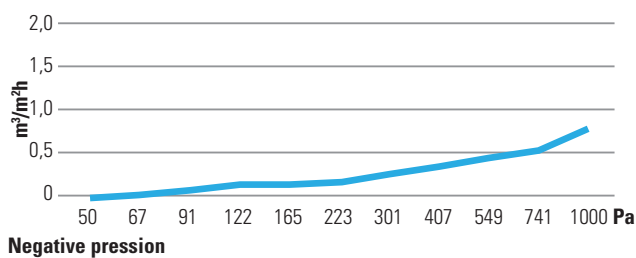
POSITIVE PRESSION Pa	AIR PERMEABILITY	
	m <sup>3</sup> / m <sup>2</sup> h (1000 mm)	m <sup>3</sup> / m <sup>2</sup> h (1155 mm)
50	0,01	0,01
67	0,03	0,03
91	0,07	0,06
122	0,13	0,11
165	0,16	0,14
223	0,19	0,16
301	0,30	0,26
407	0,39	0,34
549	0,49	0,42
741	0,60	0,52
1000	0,89	0,77

NEGATIVE PRESSION Pa	AIR PERMEABILITY	
	m <sup>3</sup> / m <sup>2</sup> h (1000 mm)	m <sup>3</sup> / m <sup>2</sup> h (1155 mm)
50	0,01	0,01
67	0,02	0,02
91	0,05	0,04
122	0,11	0,10
165	0,14	0,12
223	0,17	0,15
301	0,23	0,20
407	0,31	0,27
549	0,36	0,31
741	0,46	0,40
1000	0,63	0,55

HEAT LOSS IN THE JOINT:  $U_f = 0,140 \text{ W/m}^2 \text{ K}$



## AIR PERMEABILITY

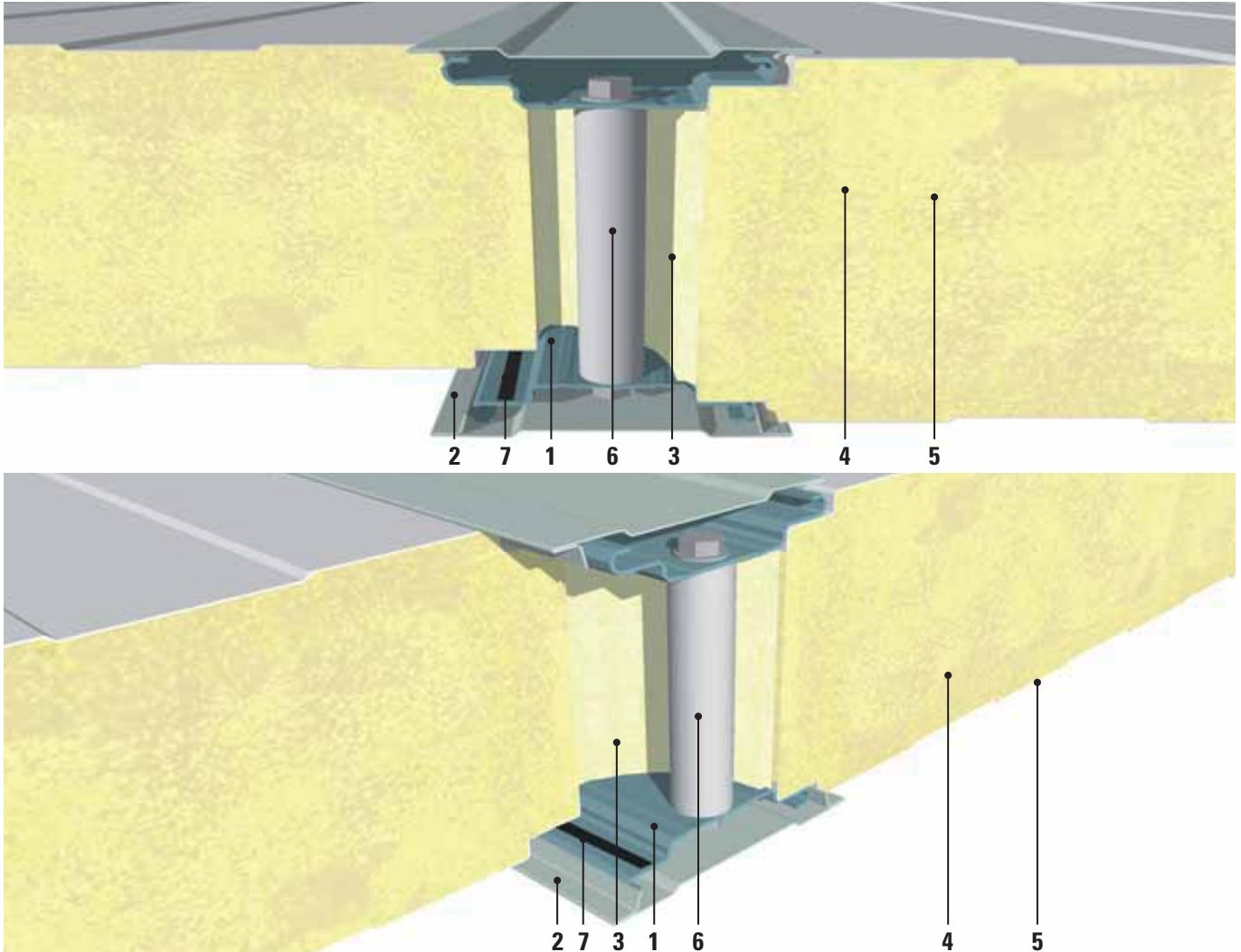


1000 Pa ≈ 100 kg/m<sup>2</sup>



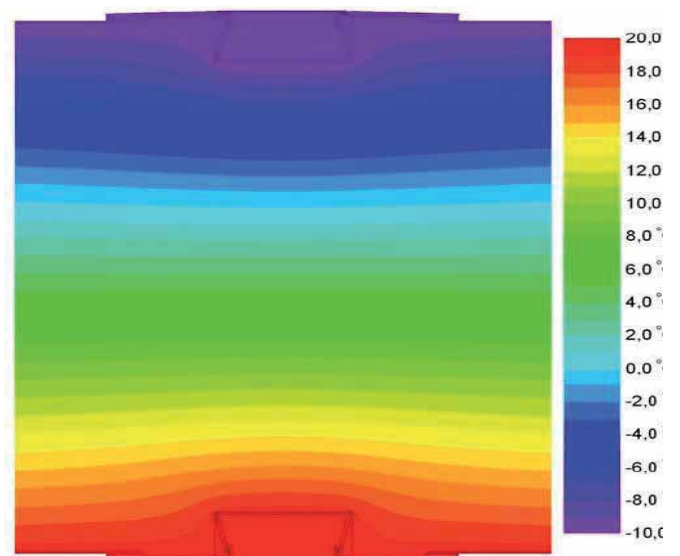
## Foamed joint

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



1. Galvanised plate
2. Finishing profile
3. Insulating foam placed on site
4. Insulating core
5. Profiled sheet
6. Fixing elements
7. Gasket

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



### APPLICATION

Adapted for temperatures till  $-28^{\circ}\text{C}$ .

