



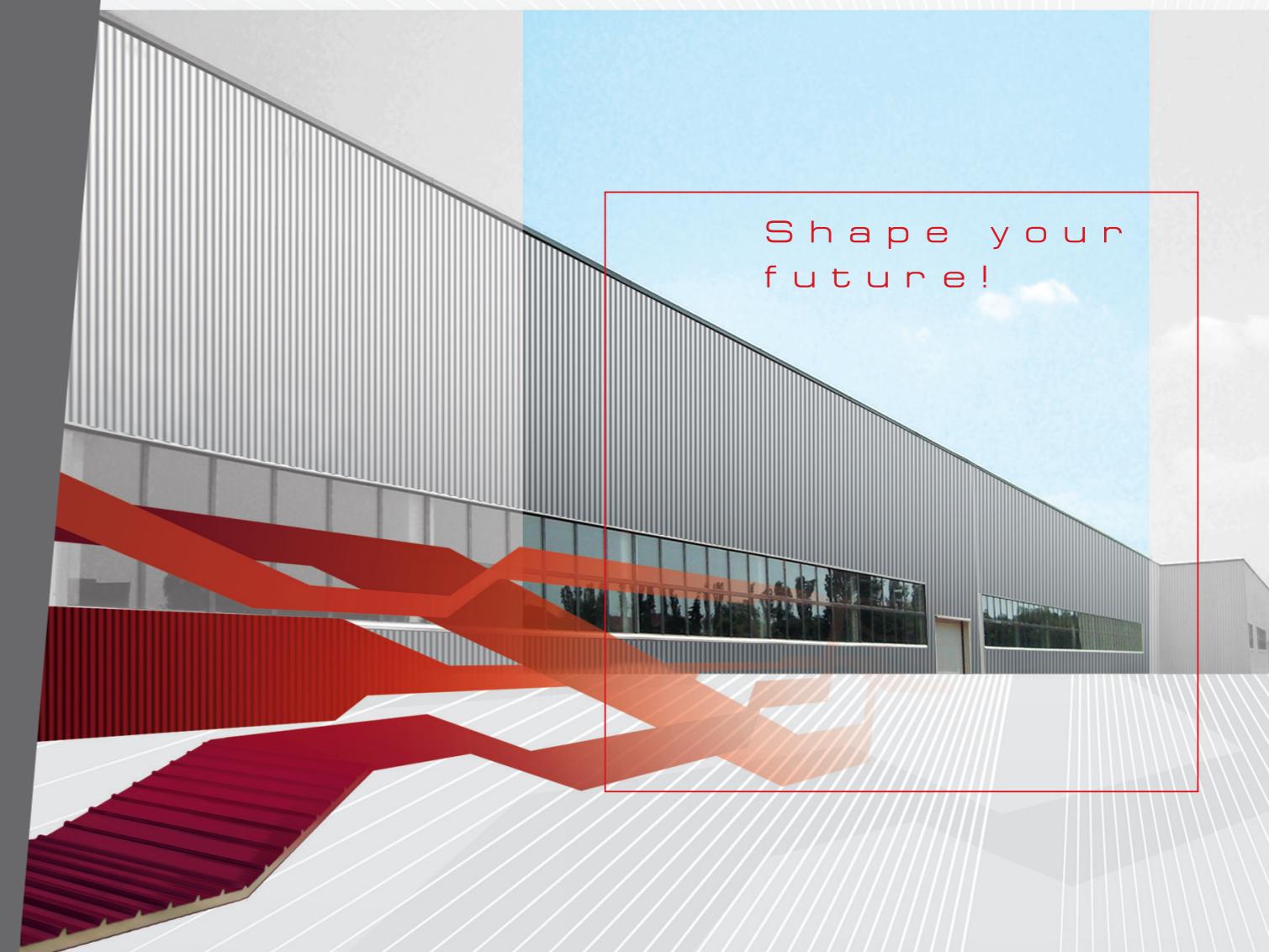
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**TECHNOPANEL**

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



#### OUR VALUES:

We look forward into the future  
We do not just sell products, we supply solutions  
Honesty and professionalism

#### OUR GOALS:

To understand client's needs and expectations, offering individual solutions corresponding to both of them.  
To be heralds of innovations and moral in the business field, we work in.  
To develop our products in a way, facilitating and simplifying the construction process continuously and progressively.

#### OUR MISSION:

To be an example and herald of the model: The Bulgarian production is a symbol of quality!



Besides the high quality sandwich panels, offered in a wide range of types and dimensions, our clients can rely on a professional advice and support in solving different cases in the face of our well-trained sales representatives and engineering team, which develops drawings of all the joints of the cladding system, prepares installation plans and conformed with them delivery schedules, calculates the quantity and cost of all the necessary panels and equipment of the project. Due to the construction companies, who are our partners, we can offer professional help in the site construction with our panels and all the necessary equipment for their completion. Our clients can rely on our expert help during all site construction stages with sandwich panels after its construction assembly.

Technopanel EAD is the Bulgarian company, which develops, manufactures and markets roof and wall cladding systems composed of sandwich panels for the needs of the industrial construction.

The Technopanel plant is equipped with a modern manufacturing line designed and manufactured according to the latest developments of the continuous production technologies. The installation is fully automated, capacity being 1 million sq. m. annually at one shift working cycle.

The sandwich panels **TTOP** and **TFACE** are made of high quality materials, which provide their excellent physical and mechanical properties thanks to which they have a wide range of application. The exceptional thermal insulation qualities of the panels are due to the physical properties of the rigid polyurethane foam, which has the lowest heat transfer properties of all commonly used insulating materials. The mineral wool in turn is an incombustible material and has excellent sound insulation properties. The rigid polyisocyanurate foam (PIR) combines the advantages of both polyurethane and mineral wool. It is characterized by equally good insulation properties as polyurethane foam, but it is with highly improved performance of fire resistance. Technopanel's new product range of sandwich panels with polyisocyanurate insulation offers a wide range of types and dimensions and respectively fire reaction levels, which can be conformed to the specific project requirements.

- Despite its own low weight, the sandwich panels **TTOP** and **TFACE** possess considerable strength properties, much better than those of their components individually, which results in saving of the construction from 2 to 4 times.
- Quick and easy installation, independent of outside weather conditions
- Density of joints between the panels, which guarantees water proof and thermal insulation reliability
- They satisfy all requirements and standards of environmental protection
- They bring an aesthetic finish of buildings and their metal surfaces are easily combined with other materials
- They require minimal maintenance over their long lifetime.



# TTOP ROOF PANELS

The **TTOP** roof panels with insulation core of rigid polyurethane foam (PUR), rigid polyisocyanurate foam (PIR) or mineral wool (MW) are suitable for every type of thermo insulated roofs at a minimum inclination of 7%. Problems like leakages and dust are completely eliminated by precise and flawless assemblies of panels.

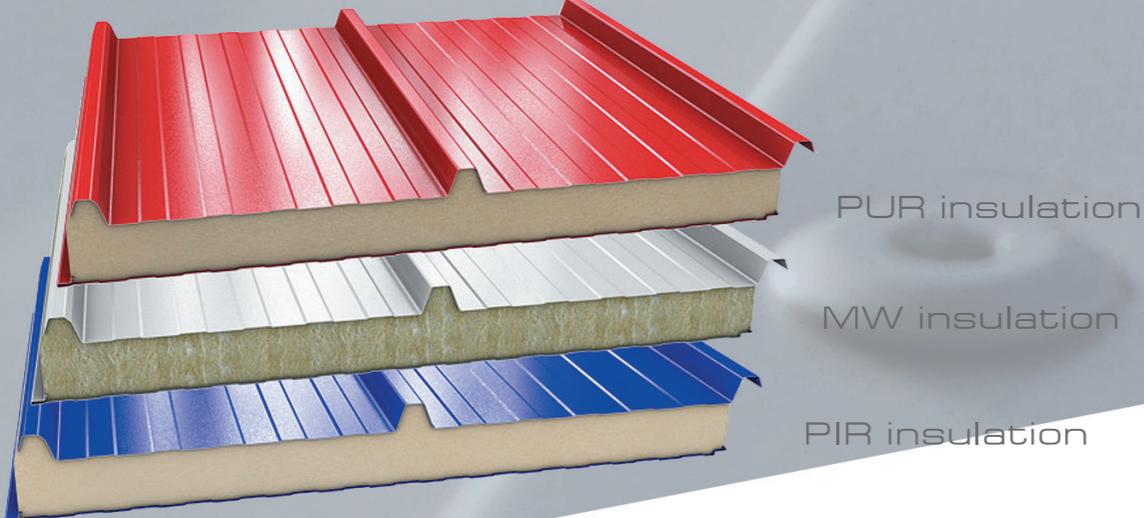
Thanks to the exceptional loading capacity and their low own weight the TOP panels enable the reaching of greater distances between the purlins, which results in saving material from the supporting structure and reducing execution time.

They can be with 3 or 5 ribs and the outer and inner layers are hot dip galvanized steel sheets with finishing polyester coloured coating.

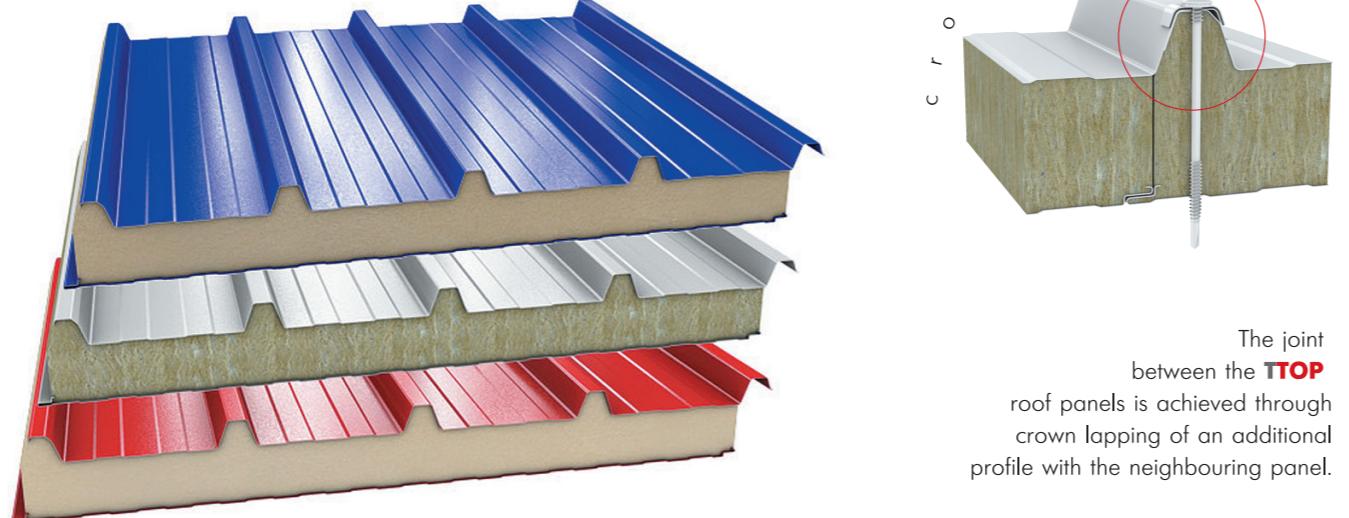
Standard thicknesses of the **TTOP** panels vary between 30 - 120 mm.

- Covering width – 1000 mm
- Maximal length – 15000 mm

## TTOP 3 - Roof panels with three ribs



## TTOP 5 - Roof panels with five ribs



<b>TTOP</b>		polyurethane rigid foam						polyisocyanurate rigid foam							
thickness of the panel (mm)	height of the rib (mm)	30	40	50	60	80	100	120	30	40	50	60	80	100	120
thickness of the steel sheet external (mm)	internal (mm)	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
weight of the panel with 3 ribs *	(kg/m <sup>2</sup> )	9.53	9.93	10.33	10.73	11.53	12.33	13.13	9.59	10.01	10.43	10.85	11.69	12.53	13.37
weight of the panel with 5 ribs *	(kg/m <sup>2</sup> )	9.85	10.25	10.65	11.05	11.85	12.65	13.45	9.91	10.33	10.75	11.17	12.01	12.85	13.69
coefficient of thermal conduction**	U(W/m <sup>2</sup> K)	0.68	0.52	0.43	0.36	0.27	0.22	0.19	0.65	0.50	0.41	0.35	0.26	0.21	0.18

\* the weight of the panel is calculated for density of the polyurethane rigid foam 40 kg/m<sup>3</sup>; \*\*  $\lambda = 0,023 \text{ W/mK}$

\* the weight of the panel is calculated for density of the polyisocyanurate rigid foam 42 kg/m<sup>3</sup>;  
\*\*  $\lambda = 0,022 \text{ W/mK}$

<b>TTOP</b>		mineral wool					
thickness of the panel (mm)	height of the rib (mm)	50	60	80	100	120	
thickness of the steel sheet external (mm)	internal (mm)	0.50	0.50	0.50	0.50	0.50	
weight of the panel with 3 ribs *	(kg/m <sup>2</sup> )	14.23	15.23	17.23	19.23	21.23	
weight of the panel with 5 ribs *	(kg/m <sup>2</sup> )	14.55	15.55	17.55	19.55	21.55	
coefficient of thermal conduction**	U(W/m <sup>2</sup> K)	0.59	0.50	0.39	0.31	0.26	
fire resistance	min	-	-	REI60	REI60	REI60	

Loading chart in kg/m<sup>2</sup> for **TTOP** PU

thickness of the panel S, mm	thickness of the steel sheet	statistical scheme											
		continuous beam					simple beam						
		internal	external	I=1,5 m	I=2,0 m	I=2,5 m	I=3,0 m	I=3,5 m	I=1,5 m	I=2,0 m	I=2,5 m	I=3,0 m	I=3,5 m
3 ribs	30	0.45 mm	0.5 mm	-	-	-	-	-	-	-	-	-	
	40	0.45 mm	0.5 mm	475	293	186	124	101	348	221	127	101	65
	50	0.45 mm	0.5 mm	520	310	203	143	114	389	250	165	117	73
	60	0.45 mm	0.5 mm	639	335	237	162	120	444	289	183	131	99
	80	0.45 mm	0.5 mm	713	377	297	200	150	602	312	238	150	120
	100	0.45 mm	0.5 mm	740	403	316	221	175	629	338	252	166	136
	120	0.45 mm	0.5 mm	765	419	342	248	189	642	349	276	180	150
5 ribs	30	0.45 mm	0.5 mm	-	-	-	-	-	-	-	-	-	
	40	0.45 mm	0.5 mm	573	351	269	191	137	525	303	221	143	89
	50	0.45 mm	0.5 mm	610	472	325	238	173	562	407	262	180	123
	60	0.45 mm	0.5 mm	686	509	341	245	180	644	451	284	192	131
	80	0.45 mm	0.5 mm	842	552	359	263	189	808	507	318	219	149
	100	0.45 mm	0.5 mm	941	592	374	279	200	903	544	347	236	174
	120	0.45 mm	0.5 mm	1012	637	429	305	223	940	580	373	270	203

Loading chart in kg/m<sup>2</sup> for **TTOP** MW

thickness of the panel S, mm	thickness of the steel sheet	statistical scheme											
		continuous beam					simple beam						
		internal	external	I=1,5 m	I=2,0 m	I=2,5 m	I=3,0 m	I=3,5 m	I=1,5 m	I=2,0 m	I=2,5 m	I=3,0 m	I=3,5 m
3 ribs	50	0.5 mm	0.5 mm	172	112	90	75	60	150	97	75	60	45
	60	0.5 mm	0.5 mm	187	131	105	87	71	165	115	88	74	57
	80	0.5 mm	0.5 mm	225	165	135	112	97	195	150	120	105	82
	100	0.5 mm	0.5 mm	253	183	160	127	107	233	164	141	118	94
	120	0.5 mm	0.5 mm	300	230	190	150	120	250	210	160	130	105
	50	0.5 mm	0.5 mm	230	150	120	100	80	200	130	100	80	65
	60	0.5 mm	0.5 mm	263	177	147	119	97	222	153	121	101	79
5 ribs	80	0.5 mm	0.5 mm	300	220	180	150	130	260	200	160	140	110
	100	0.5 mm	0.5 mm	328	237	194	162	146	270	218	185	162	146
	120	0.5 mm	0.5 mm	370	270	230	200	180	310	270	220	190	150

# TFACE WALL PANELS

The **TFACE** wall panels with insulation core of rigid polyurethane foam (PUR), polyisocyanurate rigid foam (PIR) or mineral wool (MW) are used for facades of industrial and office buildings, production halls, warehouses, sport halls, hypermarkets, business centers, garages, gas stations, etc. They are suitable for almost all kinds of sites, which require good insulation, quick assembly and aesthetic look of the building.

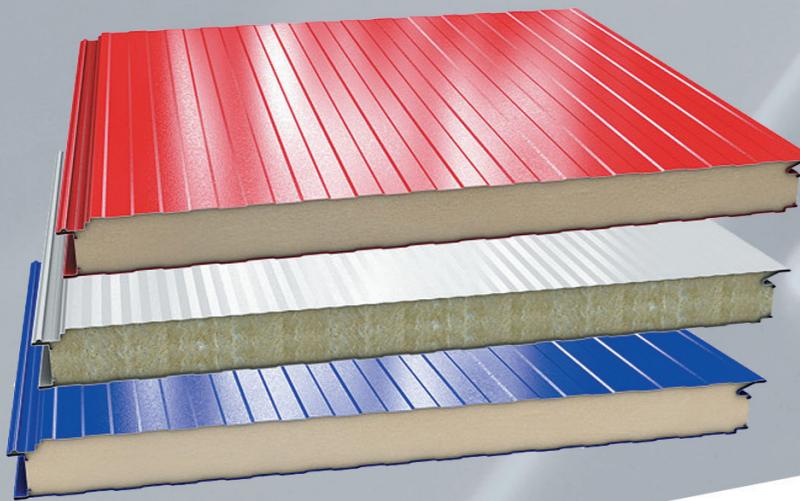
The panels have typical ribbing or smooth surface and the outer and inner layers are hot dip galvanized steel sheets with finishing polyester coloured coating.

The joining methods between the **TFACE** wall panels allow vertical, as well as horizontal assembly. This, in combination with the different types of profiling of the steel sheet gives the opportunity for a variety of architectural solutions and brings an aesthetic look of the facades, and the density of the joints guarantees water-proof and thermal insulation reliability.

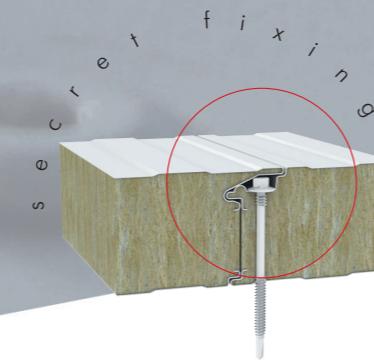
Standard thicknesses of the **TFACE** panels vary between 25 – 200 mm.

- Covering width – 1000 mm
- Maximal length – 15000 mm

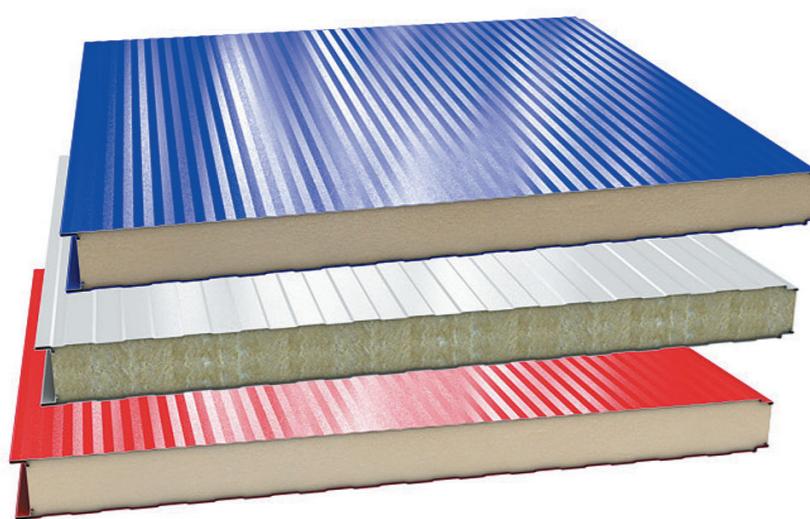
## TFACE S – Wall panels with secret fixing



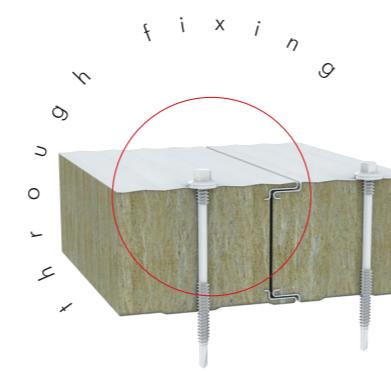
The joint between the **TFACE S** wall panels (with secret fixing), is achieved through the double tongue-groove method.



## TFACE T – Wall panels with through fixing



The joint between the **TFACE T** wall panels (with through fixing) is achieved through the tongue-groove method.



TFACE PU		polyurethane rigid foam														
		through fixing								secret fixing						
thickness of the panel (mm)	25	30	50	60	80	100	120	150	180	40	50	60	80	100	120	
thickness of the steel sheet external (mm)	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	
internal (mm)	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	
weight of the panel *	(kg/m <sup>2</sup> )	8.90	9.10	9.90	10.30	11.10	11.90	12.70	13.90	15.10	9.93	10.33	10.73	11.53	12.33	13.13
coefficient of thermal conduction** U(W/m <sup>2</sup> K)		0.80	0.68	0.43	0.36	0.27	0.22	0.19	0.15	0.13	0.52	0.43	0.36	0.27	0.22	0.19
fire resistance	min	-	-	-	EI15	EI15	EI15	EI15	EI15	-	-	-	EI15	EI15	EI15	

\* the weight of the panel is calculated for density of the polyurethane rigid foam 40 kg/m<sup>3</sup>; \*\*  $\lambda = 0,023 \text{ W/mK}$

TFACE PIR		polyisocyanurate rigid foam														
		through fixing								secret fixing						
thickness of the panel (mm)	25	30	50	60	80	100	120	150	180	40	50	60	80	100	120	
thickness of the steel sheet external (mm)	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	
internal (mm)	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	
weight of the panel *	(kg/m <sup>2</sup> )	8.95	9.16	10.00	10.42	11.26	12.10	12.94	14.20	15.46	10.01	10.43	10.85	11.69	12.53	13.37
coefficient of thermal conduction** U(W/m <sup>2</sup> K)		0.77	0.65	0.41	0.35	0.26	0.21	0.18	0.14	0.12	0.50	0.41	0.35	0.26	0.21	0.18
fire resistance	min	-	-	-	-	EI30	EI30	EI30	EI30	-	-	-	EI30	EI30	EI30	

\* the weight of the panel is calculated for density of the polyisocyanurate rigid foam 42 kg/m<sup>3</sup>; \*\*  $\lambda = 0,022 \text{ W/mK}$

TFACE MW		mineral wool													
		through fixing								secret fixing					
thickness of the panel (mm)	50	60	80	100	120	150	50	60	80	100	120	150	170	200	230
thickness of the steel sheet external (mm)	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
internal (mm)	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
weight of the panel *	(kg/m <sup>2</sup> )	13.80	14.80	16.80	18.80	20.80	23.80	14.23	15.23	17.23	18.75	21.23	21.23	21.23	21.23
coefficient of thermal conduction** U(W/m <sup>2</sup> K)		0.59	0.50	0.39	0.31	0.26	0.21	0.59	0.50	0.39	0.31	0.26	0.21	0.21	0.21
fire resistance	min	EI60	EI60	EI60	EI60	EI120	EI60	EI60	EI60	EI60	EI60	EI60	EI60	EI60	EI60

\* the weight of the panel is calculated for density of the mineral wool 100 kg/m<sup>3</sup>; \*\*  $\lambda = 0,033 \text{ W/mK}$

thickness of the panel S, mm	thickness of the steel sheet	statistical scheme											
		continuous beam						simple beam					
internal	external	I=2,5 m	I=3,0 m	I=3,5 m	I=4,0 m	I=4,5 m	I=5,0 m	I=2,5 m	I=3,0 m	I=3,5 m	I=4,0 m	I=4,5 m	I=5,0 m
25	0.45 mm	0.5 mm	-	-	-	-	-	-	-	-	-	-	-
40	0.45 mm	0.5 mm	161	118	67	-	-	-	136	92	57	-	-
50	0.45 mm	0.5 mm	164	127	85	60	-	-	140	100	60	-	-
60	0.45 mm	0.5 mm	197	157	131	96	67	52	157	144	107	76	51
80	0.45 mm	0.5 mm	213	173	150	120	102	71	176	169	123	101	78
100	0.45 mm	0.5 mm	235	180	168	142	103	80	197	172	130	110	86
120	0.45 mm	0.5 mm	267	219	185	159	142	123	243	199	168	144	136
150	0.45 mm	0.5 mm	337	277	234	202	181	157	307	252	213	183	176
180	0.45 mm	0.5 mm	350	303	253	230	209	179	328				



# WALL REFRIGERATOR PANELS

Wall refrigerator panels **FRIGOPANEL, TFACE T** family.

Depending on their thickness, panels could be for refrigerator chambers with positive temperatures and, panels for refrigerator chambers with negative temperatures.

**FRIGOPANEL TFACE T** is a family of self-standing panels with polyurethane insulation.

This family has assembling of cog - groove intended to build refrigerator storing premises with positive and negative temperatures, and it is designed to provide complete decisions for refrigerator industry, providing the following advantages:

- LOW HEAT PERMEABILITY
- WATER PROOF SURFACE
- LOW WEIGHT
- NICE AESTHETIC LOOK
- DURABILITY
- EASY AND FAST MOUNTING



# WALL REFRIGERATOR PANELS

## PANELS FOR REFRIGERATOR CHAMBER WITH **POSITIVE TEMPERATURES**

**FRIGOPANEL TFACE T** is a family of self-standing panels with polyurethane insulation, useful width of 1000 mm, with thickness of 60, 80, 100, 120 mm.

This family has assembling of cog - groove intended to build refrigerator storing premises with positive temperatures, and it is designed to provide complete decisions for refrigerator industry.



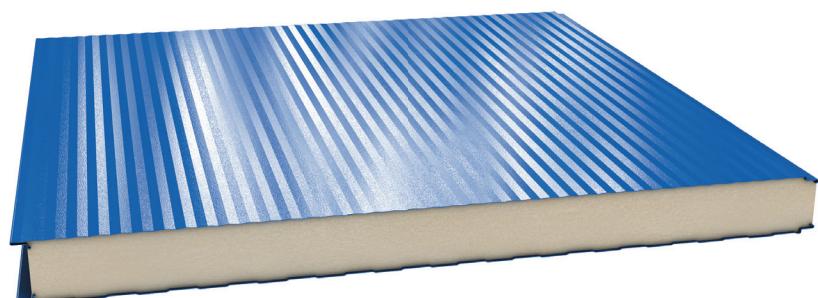
Loading chart in kg/m<sup>2</sup> for **TFACE** PU

thickness of the panel <i>S</i> , mm	thickness of the steel sheet		statistical scheme											
			continuous beam						simple beam					
	internal	external	I=2,5 m	I=3,0 m	I=3,5 m	I=4,0 m	I=4,5 m	I=5,0 m	I=2,5 m	I=3,0 m	I=3,5 m	I=4,0 m	I=4,5 m	I=5,0 m
60	0.45 mm	0.5 mm	197	157	131	96	67	52	157	144	107	76	51	40
80	0.45 mm	0.5 mm	213	173	150	120	102	71	176	169	123	101	78	50
100	0.45 mm	0.5 mm	235	180	168	142	103	80	197	172	130	110	86	60
120	0.45 mm	0.5 mm	267	219	185	159	142	123	243	199	168	144	136	111

## PANELS FOR REFRIGERATOR CHAMBERS WITH **NEGATIVE TEMPERATURES**

**FRIGOPANEL TFACE T** is a family of self - standing panels with polyurethane insulation, useful width of 1000 mm, with thickness of 120, 150, 180 mm.

This family has assembling of cog - groove intended to build refrigerator storing premises with negative temperatures, and it is designed to provide complete decisions for refrigerator industry.



Loading chart in kg/m<sup>2</sup> for **TFACE** PU

thickness of the panel <i>S</i> , mm	thickness of the steel sheet		statistical scheme											
			continuous beam						simple beam					
	internal	external	I=2,5 m	I=3,0 m	I=3,5 m	I=4,0 m	I=4,5 m	I=5,0 m	I=2,5 m	I=3,0 m	I=3,5 m	I=4,0 m	I=4,5 m	I=5,0 m
120	0.45 mm	0.5 mm	267	219	185	159	142	123	243	199	168	144	136	111
150	0.45 mm	0.5 mm	337	277	234	202	181	157	307	252	213	183	176	142
180	0.45 mm	0.5 mm	350	303	253	230	209	179	328	275	224	204	193	164