

TECHNICAL SOLUTIONS CATALOGUE – CONTENTS



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TECHNICAL SOLUTIONS CATALOGUE – GENERAL INFORMATION



▷ INTRODUCTION

This publication is intended to present an assortment and technical properties of sandwich panels to our customers. With over a decade of experience and extensive knowledge we perfectly know the needs of the market. As a result, we create products and solutions that give our customers real benefits.

□ ABOUT THE COMPANY

Gór-Stal[®] is a Polish company founded in 2003. It had originally produced and sold finished steel construction elements. The increase in demand for building materials for light industrial facilities forced co-owners to buy the line for the production of sandwich panels with a polyurethane core. It is one of the most modern and technologically advanced production lines in Europe. Gór-Stal[®] manufactures **sandwich panels** and **termPIR[®] insulating boards**. Sandwich panels are commonly used building materials for light cladding of industrial halls, warehouses, production halls and commercial buildings, offices, administrative buildings, freezers and cold storages. Since the beginning of the company's operation it has rapidly developed and extensively expanded its operations both geographically and in terms of product offerings. Gór-Stal[®] is recognized by customers in Poland, Czech Republic, Austria, Romania, Belgium, the Netherlands, Luxembourg, Great Britain, France, Germany, Estonia and the Nordic countries, Slovakia, Hungary, Ukraine, Lithuania and Latvia. We currently have two factories, one in Gorlice and the other in Bochnia, where we manufacture termPIR[®] insulation boards.

D PRODUCTS

Gór-Stal[®] offers a wide range of modern wall, roof and coldstore sandwich panels **with polyisocyanurate (PIR) core**. Sandwich panels consist of two steel claddings and a structural insulation core of rigid, HCFC-free self-extinguishing PIR foam with very good thermal insulation. When building with sandwich panels, you can create a building with excellent insulation parameters, with a significant reduction in the thickness and weight. Speed and ease of assembly, possibility of carrying out the work even in difficult weather conditions, low cost of implementation and ease of wall cleaning, modernity and versatility of the system make sandwich panels the best building material. A wide range of colors and varied shape of panels profiles allow for the implementation of ambitious architectural projects. Gór-Stal[®] owes its leader position in the production of sandwich panels to high technological advancement of production lines, well-qualified team of employees and special attention to the quality of the products.

○ STRUCTURE OF PANELS

Sandwich panels have one type of core ie. **polyisocyanurate (PIR) foam** with a density of **37,5 kg/m³ (+/-10%)** and thermal conduction coefficient λ =0,022 W/m·K. (for 2020 new panels will be available ie. MAX with a core and a coefficient of λ =0,019 W/m·K). Isocyanurate structures of PIR foams decompose at temperatures above **300** °C. The carbonized layer protects against heat transition through the panel, which in turn provides an effective protection against fire. Sheet metal grade **S220-S280GD DIN EN 10346** galvanized on both sides with the organic polyester lacquer with a film thickness of 25 microns is used as cladding of sandwich panels. Due to the increased anticorrosion requirements, it is possible to make panels with metal plate dedicated for environments C4 and C5, and the prevailing aggressive environments inside the buildings. It is possible to use stainless steel **1.4301** coating. Panels are protected against mechanical damage that may occur during transport or installation with a protective foil.

CERTIFICATES

Sandwich panel have the following certificates and technical approvals:

- Quality Management System certificate,
- CE declaration of conformity in accordance with EN 14509,
- Certificate of Constancy of Performance EN 14509, according to Regulation (EU) No 305/2011,
- · Classifications: fire resistance rating, reaction to fire, fire retardancy,
- Hygienic Approval allows for use in, commercial, industrial, food processing, refrigeration facilities, residential and public buildings, including health services.

Current versions of the documents are available at: www.gor-stal.pl

TECHNICAL SOLUTIONS CATALOGUE – GENERAL INFORMATION



Wall p	anel	GS in	sPli	Re [®] S
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						HIGH LEVE RESIST	LOFFIRE	
01	Type of core			Rigid polyis	ocyanurate	e foam (PIR)	
02	Density [kg/m³]	40 (+/-10%)						
03	Thickness [mm]	40	60	80	100	120		
04	Weight [kg/m²]*	10,0	11,0	11,8	12,6	13,4		
05	Maximum length [m]		16,5					
06	Total width [mm]		1000 / 1140 (for thick. ≥ 60 mm and lining profiling L, M and F)					
07	External lining profiling		L - Linear, M -Mikro-profiling, F - Wavy, R - Grooving, P -Flat				vy,	
08	Internal lining profiling		L - Linear, P -Flat					
09	Standard colours of external	lining**	RAL 90	02 RAL 9010	RAL 9006	RAL 9007 R	NL7016	
10	Standard colours of internal	lining**		RAL	. 9002 RAL 9	010		
11	Cofficent II [W/m ² //]	PIR core	0,60	0,38	0,28	0,22	0,19	
		PIR MAX core	-	-	0,24	0,19	0,16	
12	Fire propagation/Fire classif	ication		N	IRO/B-s1, d	0		
13	Fire resistance***	- EI 20 EI 30				EI 30		

						HIGHLEVE	L OF FIRE	
01	Type of core		1	Rigid polyis	ocyanurat	e foam (PIR	:)	
02	Density [kg/m ³]			4	0 (+/-10%	»)		
03	Thickness [mm]		60	80	100	120	140	
04	Weight [kg/m²]*	11,3	12,1	12,9	13,7	14,5		
05	Maximum length [m]		16,5					
06	Total width [mm]	1000						
07	External lining profiling		L - Linear, M -Mikro-profiling, F - Wavy, R - Grooving, P - Flat					
08	Internal lining profiling		L - Linear, P - Flat					
09	Standard colours of external	lining**	Ral 9002 Ral 9010 Ral 9006 Ral 9007 Ral 5010 Ral 7035 Ral 3000 Ral 6011 Ral 7016 Ral 8017					
10	Standardowe kolory okładzi wewnętrznej**	ny		RA	L 9002 RAL 9	010		
11	Cofficent U., [W/m²K]	PIR core	0,44	0,29	0,23	0,19	0,16	
		PIR MAX core	-	0,26	0,20	0,16	0,14	
12	Fire propagation/Fire classif	ication		N	RO/B-s1, d	0		
13	Fire resistance***			-	EI 15	EI	30	
14 Certificates, approvals, seals of approval			DWU CE according to EN 14509, Hygienic Certificate, Certificate of Business Continuity EN 14509, Fire resistance classification					

Roof Panel GS PIR D



1	Type of core	ype of core Rigid polyisocyanurate foam (PIR)								
2	Density [kg/m³]				4	0 (+/-10%	6)			
3	Thickness [mm]		40/80	60/100	80/120	100/140	120/160	150/190	160/200	
4	Weight [kg/m²]*		10,8	11,6	12,4	13,2	14,0	15,2	15,6	
5	Maximum length [m]					16,5				
6	Total width [mm]			1000						
7	External lining profiling			Τ-	Trapezoi	dal				
8	Internal lining profiling	L - Linear, G - Smooth								
9	Standard colours of exte lining**	RAL 9002 RAL 9010 RAL 9005 RAL 9007 RAL 5010 RAL 7035 RAL 3000 RAL 6011 RAL 7016 RAL 8017								
10	Standard colours of inte lining**	ernal	RAL 9002 RAL 9010							
11	Cofficent II [W/m ²]/]	PIR core	0,55	0,37	0,27	0,22	0,18	0,15	0,14	
11	concent o _{d,s} [w/m k]	PIR MAX core	-	-	0,25	0,20	0,17	0,13	0,13	
12	Fire propagation/Fire cl	assification			B _R	_{ooF} /B-s1,	10			
13	Fire resistance***			-		RE	1 30, RE 1	20		
14	Certificates, approvals, seals of approval			, DWU CE according to EN 14509, Hygienic Certificate, Certificate of Business Continuity EN 14509, Fire resistance classification						

Coldstore Panel GS insPIRe® CH

Certificates, approvals, seals of approval

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more information in the Coldstore panels Catalogue or at www.gor-stal.pl

DWU CE according to EN 14509, Hygienic Certificate, Certificate of Business Continuity EN 14509, Fire resistance classification

0	1	Type of core		Rigi	id polyisocyar	nurate foam (F	기R)	
0	2	Density [kg/m³]		40 (+/-10%)				
0	3	Thickness [mm]		100	120	160	200	
0	4	Weight [kg/m²]*		12,6	13,4	15,0	16,6	
0	15	Maximum length [m]			16	,5		
0	6	Total width [mm]	(for thick. ≥	1000 / 1140 (for thick. ≥ 60 mm and lining profiling L, M and F				
0	17	External lining profiling	L - Lir	iear, M -Mikro	-profiling, F -	Wavy		
0	8	Internal lining profiling		L - Linear, P - Flat				
0	09 Standard colours of external lining**			RAL 9002 RAL 9010 RAL 9006 RAL 9007 RAL7016				
1	.0	Standard colours of internal	lining**	RAL 9002 RAL 9010				
1	1	Cofficent II [W/m ² //]	PIR core	0,22	0,18	0,14	0,11	
_		concent o _{ds} [with K]	PIR MAX core	0,19	0,16	0,12	0,10	
1	2	Fire propagation/Fire classif	ication		NRO/B	-s1, d0		
1	.3	Fire resistance***			EI	30		
1	14 Certificates, approvals, seals of approval			DWU CE according to EN 14509, Hygienic Certificate, Certificate of Business Continuity EN 14509, Fire resistance classification				

panels with claddings 0,5/0,5 mm
 available colors depending on the thickness of the cladding, panels thicknesses and modular widths (details from the Sales Representative)
 conditions according to fire resistance classification

Wall panel GS insPIRe® U





D PROFILATIONS



M - Mikro-profiling



L - Linear



F - Wavy

TECHNICAL SOLUTIONS CATALOGUE – GENERAL INFORMATION



D PRODUCTION PROGRAM

The production program for sandwich panel systems includes the following items:

Wall sandwich panels:

GS insPIRe[®] S (standard cam-lock) - thickness: 40, 60, 80, 100 i 120 mm GS insPIRe[®] U (hidden cam-lock) - thickness: 60, 80, 100, 120 i 140 mm

Roof sandwich panels:

GS PIR D (roof cam-lock) - thickness: 40/80, 60/100, 80/120, 100/140, 120/160, 150/190 and 160/200 mm Coldstore panels:

GS insPIRe[®] CH (cold storage cam-lock) - thickness: 100, 120, 160 i 200 mm

Flashings: typical and custom made according to the client's design with a maximum length of 6m.

This publication provides detailed characteristics of sandwich panels.

D GUIDELINES FOR TRANSPORTATION

Sandwich panels are packed in batches. Loading and unloading of the batches may be done by means of forklift trucks or a lift equipped with an appropriate bar lifting sling, however:

- a single forklift truck may be used to move a package of panels with maximum length of 8 metres,
- panels with length exceeding 8 m need to be unloaded using a lift with a hoisting beam,
- if unloading panels using a lift with rope slings, use spacers to prevent panels from being crushed.

The transportation of sandwich panels shall be carried out by vehicles adapted for that purpose, while maintaining the following conditions:

- ensure unobstructed access on both sides of the trailer along its entire length,
- never stack panels more than two packages high
- complete support for a panel package must be provided along the entire length of the open load-carrying body,
- ensure there is sufficient clear space between panel packages, the load-carrying body and the cargo straps,
- the truck must be equipped with cargo straps. Place flexible separators underneath the cargo straps.
- When tightened, the straps must not deform the panels.

\bigcirc GUIDELINES FOR MOUNTING

The sandwich panel manufacturer recommends that you use flashings and cam-locks delivered with the panels as part of the light sandwich panel system. When mounting the panels, follow the guidelines provided below:

- only cut plates and flashings with a fine-toothed circular saw machine or metal cutting scissors. Never use grinding wheels.
- cut the panels and flashings at a properly prepared station in order not to damage the lacquer and thin coatings,
- remove the protection foil after the panels have been installed,
- after installation thoroughly clean the surface of the panels, particularly off steel filings,

Typical panel mounting solutions are presented farther in this publication.

D TECHNICAL SUPPORT

We strive to deliver friendly and professional customer service. Our technical department and sales representatives assist designers, engineers and contractors in designing, ordering and selecting our products as well as installation thereof. Our customers are thus provided with active support from the design stage to the installation stage as well as prompt technical advisory service and cost calculation. The ordering and delivery process is coordinated by the **Customer Service Department** (DOK).

For more information visit our website www.gor-stal.pl



▷ APPLICATION

GS insPIRe[®] **CH** / **GS insPIRe**[®] **CH MAX** coldstore panel is intended to build the walls and ceilings in rooms with low temperature or in cold storage (t>0 °C) and freezers (t<0 °C), and other facilities with controlled temperature and humidity. Panels can be used to erect freestanding objects and cold rooms or freezers inside existing buildings. Panels can be assembled both vertical and horizontal, as single and multi-span elements.

D PHYSICAL PROPERTIES

GS insPIRe[®] **CH** / **GS insPIRe**[®] **CH MAX** coldstore panel is produced in the four thicknesses of the core **100**, **120**, **160** and **200 mm**. Panel facings are made of sheet metal galvanised on both sides according to **EN 10346** with organic polyester coating **25µm** thick. Thermal insulation core of the panels is a rigid polyisocyanurate (PIR) foam with a density of **37,5 kg/m³ (+/-10%)**. The heat conductivity calculation value of the foam is: $\lambda = 0,022$ W/m·K (for 2020 new panels will be available MAX with a core and a coefficient of $\lambda = 0,019$ W/m·K). Modular width of plates is **1000 mm or 1140 mm**. The standard panel length is between **2.0 to 12 m**. On special request we deliver panels shorter than **2 m** and longer than **12 m**, with a maximum length of **16.5 meters**. Water and air tightness of panel joints is assured by impregnated polyure than easls (**PUS**) applied in the manufacturing process.

Thickness [mm]	Weight [kg/m²]		Weight [kg/m²]		Weight Modular width [kg/m ²] [mm]		Length: typical/available [m]	Lining s RAL co	tandard olours
	facings 0,5/0,5 mm**	facings 0,5/0,4 mm**			external linings*	internal linings*			
100	12,5	11,6	1000	20-120/165	7016, 9002,	9002, 9010			
120	13,3	12,4	1140 - for profilation	2,0 12,0,10,5	9006, 9007,				
160	14,8	13,9	L, M, F I P.		9010				
200	16,3	15,5							

* available colors depending on the thickness of the cladding, panels thicknesses and modular widths (details from the Sales Representative) ** typical lining thicknesses; also available 0.6 and 0.7 mm (details from our Sales Representative)

Thermal performance of panels depends on the thickness of the core and is expressed as a coefficient of heat transfer through a space dividing element (shown in the table below). Acoustic parameters were determined on the basis of **EN ISO 10140-3** and **EN-ISO 354**. Coldstore plates can be used as partitions of the requirements of sound insulation no greater than those specified below. Resistance to chemical corrosion - sandwich panels can be used in environments with atmosphere corrosiveness category C1, C2, C3 according to **EN ISO 12944-2**.

D TECHNICAL PARAMETERS OF PIR CORE

Thickness [mm]	Heat-transfer coefficient U _{d.s} [W/m²·K]	Acoustic insulation	Reaction to fire	Fire resistance	NRO
	EN 14509	EN ISO 717-1	EN 13501-1	EN 13501-2	PN-B-02867
100	0,22*/ 0,19**	0 07 10	B-s1, d0		
120	0,18*/ 0,16**	$R_{w} = 23 \text{ dB}$	B-s2, d0 (with	Ei30 (Conditionsaccording to	NDO"
160	0,14*/ 0,12**	$R_{a1} = 20 \text{ dB}$	gasket EPDM)	classification)	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
200	0,11*/ 0,10**				

* U-factor for panels with conventional cores with coefficient λ =0,022 W/m·K

** U-factor for panels with conventional PIR MAX cores with coefficient λ =0,019 W/m K



D PANEL THICKNESS SELECTION

Panel thickness suitable for the facility is chosen by the designer depending on the temperature difference inside and outside the room.

The following table shows the values of heat flux for each sandwich panel. The recommended maximum heat flux density value for cold storage is **10 W/m²**.

An example of panel selection:

Internal temperature: -15 °C

External temperature: +35 °C

∆t = 50 °C

Panel suitable for covering an object with an internal temperature of **-15°C** is **GS insPIRe[®] CH** / **GS insPIRe[®] CH MAX** with a thickness of **120 mm**, for which the heat flux density is **9,24W/m²**

_	Panel type and thickness [mm]								
Temperature	GS ins	PIRe S / GSinsPIRe	S MAX	GS insPI	GS insPIRe CH / GSinsPIRe CH MAX				
Δt[°C]	60	80	100	120	160	200			
Heat flux density [W/m²]									
10	3,73	2,78	2,22	1,85	1,38	1,11			
15	5,59	4,18	3,33	2,77	2,08	1,66			
20	7,46	5,57	4,44	3,70	2,77	2,21			
25	9,32	6,96	5,56	4,62	3,46	2,76			
30	11,19	8,35	6,67	5,55	4,15	3,32			
35	13,05	9,75	7,78	6,47	4,84	3,87			
40	14,92	11,14	8,89	7,39	5,53	4,42			
45	16,78	12,53	10,00	8,32	6,23	4,97			
50	18,64	13,92	11,11	9,24	6,92	5,53			
55	20,51	15,32	12,22	10,17	7,61	6,08			
60	22,37	16,71	13,33	11,09	8,30	6,63			
65	24,24	18,10	14,44	12,02	8,99	7,19			
70	26,10	19,49	15,56	12,94	9,69	7,74			
75	27,97	20,89	16,67	13,87	10,38	8,29			
80	29,83	22,28	17,78	14,79	11,07	8,84			
85	31,69	23,67	18,89	15,71	11,76	9,40			
90	33,56	25,06	20,00	16,64	12,45	9,95			
95	35,42	26,46	21,11	17,56	13,14	10,50			

D PACKING

Sandwich panels are packed in packages on pallets to allow their transport. A typical height of such package is **1000 mm** to **1120 mm**. The number of panels in each package depends on their thickness. Details in the table below.

Panel thickness [mm]	100	120	160	200	
Maximum number of panels in one pack	11	9	7	5	



▷ TABLE OF ALLOWED LOADS FOR GS insPIRe[®] CH / GS insPIRe[®] CH MAX SANDWICH PANEL

The load capacity tables have been prepared in accordance with EN 14509 for PIR core panels with facings of thickness 0.5 mm in light colors for an indoor temperature according to the table. The adopted deflection limit is L/100. In the case of a different sheet thickness, limit deflections, temperatures, fastening or dark colors of the cladding, separate calculations must be made. The minimum width of the supports is 40 mm and 60 mm (intermediate). Number of fasteners necessary for intermediate supports - 4, for extreme supports - 3. Detailed tables of permissible loads are available on the website.

Table of maximum permissible loads for GS insPIRe[®] CH / GS insPIRe[®] CH MAX in a single span, in support direction (pressure)

Panel	Internal	The load	The maximum load [kN/m ²] on the span length [m]:									
thickness	[st. C]	due to:	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0	5,5	6,0
100	20	SGN (q_d)	10,18	7,64	6,11	5,33	3,92	3,00	2,37	1,92	1,59	1,33
100	20	SGU (q _k)	11,82	7,68	5,23	3,67	2,63	1,92	1,43	1,07	0,82	0,63
120	0	SGN (q_d)	12,41	9,31	7,44	6,40	4,71	3,61	2,84	2,31	1,91	1,60
120		SGU (q _к)	15,51	10,46	7,40	5,41	4,04	3,07	2,37	1,86	1,47	1,18
160	-15	SGN (q _d)	13,44	10,08	8,06	6,72	6,28	4,81	3,80	3,08	2,54	2,13
100	-15	SGU (q _k)	17,31	12,23	9,11	7,01	5,50	4,39	3,55	2,90	2,39	1,98
200	-25	SGN (q _d)	18,13	13,60	10,88	10,69	7,85	6,02	4,75	3,85	3,18	2,67
	-25	SGU (q _k)	25,53	18,15	13,61	10,54	8,33	6,69	5,44	4,47	3,71	3,10

Table of maximum permissible loads for **GS insPIRe**[®] **CH / GS insPIRe**[®] **CH MAX** in a single span, in non-support direction (suction)

Panel thickness	Internal temperature [st. C]	The load			The maximum load [kN/m ²] on the span length [m]:									
		due to:	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0	5,5	6,0		
100	20	SGN (q_d)	10,18	7,77	5,30	3,68	2,70	2,07	1,63	1,32	1,10	0,92		
		SGU (q _k)	12,14	7,97	5,48	3,89	2,83	2,09	1,57	1,20	0,93	0,73		
120 160 200	0 -25	SGN (q₄)	10,36	7,77	6,22	4,41	3,24	2,48	1,96	1,58	1,31	1,10		
		SGU (q _k)	14,36	9,40	6,46	4,57	3,29	2,41	1,79	1,35	1,02	0,78		

Table of maximum permissible loads for **GS insPIRe[®] CH / GS insPIRe[®] CH MAX** in a single span, in non-support direction (suction)

Panel	Internal temperature [st. C]	The load			The	maximum l	oad [kN/m	²] on the s	oan length	[m]:									
thickness		due to:	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0	5,5	6,0							
100	20	SGN (q₄)	7,57	5,66	3,66	2,34	1,61	1,17	0,88	0,69	0,56	0,46							
100		SGU (q _k)	12,57	8,71	6,43	4,90	3,79	2,97	2,36	1,90	1,55	1,26							
120	0	SGN (q_d)	8,24	6,20	4,98	3,87	2,77	2,08	1,62	1,29	1,06	0,88							
120		SGU (q _k)	16,08	11,30	8,45	6,56	5,17	4,14	3,35	2,75	2,27	1,89							
160	15	SGN (q₄)	6,91	5,18	4,15	3,46	2,96	2,60	2,31	2,08	1,80	1,51							
160	-12	SGU (q _k)	17,54	12,60	9,63	7,65	6,23	5,18	4,33	3,65	3,12	2,67							
200	-25	SGN (q _d)	7,58	5,69	4,55	3,79	3,25	2,84	2,52	2,27	2,06	1,89							
		SGU (q _k)	25,78	18,60	14,25	11,35	9,28	7,74	6,50	5,52	4,71	3,51							

Table of maximum permissible loads for **GS insPIRe[®] CH / GS insPIRe[®] CH MAX** in a multiple span, in support direction (pressure)

Panel	Internal temperature [st. C]	nternal The load			The	maximum l	oad [kN/m	²] on the s	oan length	[m]:		
thickness		[st. C]	due to	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0	5,5
100	20	SGN (q₁)	4,14	3,11	2,49	2,07	1,52	1,11	0,85	0,67	0,54	0,45
100 20	SGU (q⊧)	12,82	8,91	6,59	5,04	3,91	3,08	2,46	1,99	1,62	1,34	
120	0	SGN (q₄)	4,14	3,11	2,49	1,52	0,92	0,59	0,39	0,27	0,200	0,15
120		SGU (q₅)	15,16	10,55	7,82	6,04	4,72	3,74	2,99	2,42	1,98	1,63
160	15	SGN (q₄)	4,14	3,11	2,49	1,94	1,10	0,60	0,32	0,15	-	-
100	-15	SGU (q _k)	16,05	11,31	8,51	6,67	5,39	4,45	3,66	3,05	2,55	2,15
200	-25	SGN (q₄)	4,14	3,11	2,49	1,68	0,81	0,38	-	-	-	-
200		SGU (q₅)	23,63	16,71	12,61	9,92	8,04	6,65	5,53	4,62	3,89	3,30

- GS insPIRe[®] CH/ GS insPIRe[®] CH MAX panel manufacturing program:
 panel thicknesses
- GÓR-STAL SANDWICH PANELS

profiles of outer and inner facing

D PANEL THICKNESS





* - Profiling used for new orders as of February 2020. In the case when ordering panels for existing casings, please state this fact when placing the order and provide the previous order number as a reference.

**- for module 1140 performed after prior arrangement (details from Sales Representative)





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Example details of cooling and production rooms constructed with sandwich panels GS insPIRe[®] CH / GS insPIRe[®] CH MAX

Lock and cam-lock of coldstore panels	011
Mounting of cold store panels. Rooms with positive temperature	012
Corner of the cold store wall. Option I	013
Corner of the cold store wall. Option II	014
Joining the partition wall with the external wall	015
Detail of a wall and ceiling panel corner	016
Detail of the connection between wall and ceiling panels	017
Assembly detail of the partition wall by the floor	018
Profiles securing the wall panel	019
Detail of the cold storage door assembly - Horizontal review	020
Detail of the cold storage door assembly - Vertical review	021

Coldstore sandwich panel GS insPIRe[®] CH / GS insPIRe[®] CH MAX D Lock and cam-lock of coldstore panels





Mounting the coldstore panels Rooms with positive temperature





Corner of the cold store wall Option I





Corner of the cold store wall Option II

















- 06. Permanently plastic sealing compound
- 07. Self-drilling connector for steel sheets or rivet 4.0 x 8.0
- 08. Self-drilling stainless fastener with seal

Coldstore sandwich panel GS insPIRe[®] CH / GS insPIRe[®] CH MAX Corner of the wall panel and the roof





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Partition wall at the floor





Profiles securing the wall panel





▷ LEGEND:

- 01. Coldstore panel GS insPIRe[®] CH / GS insPIRe[®] CH MAX
- 02. Concrete floor acc. to architectural design
- 03. PVC baseboard
- 04. **PCW** bumper strip 05. Permanently plastic sealing compound
- 06. Self-drilling stainless fastener with seal

Mounting of the cold store door Horizontal cross-section





\triangleright LEGEND:

- 01. Coldstore panel GS insPIRe[®] CH / GS insPIRe[®] CH MAX
- 02. Cold store door
- 03. **PVC** insulation ring with steel insert
- 04. PVC mounting washer
- 05. Steel galvanized threaded bar Ø 10
- 06. Steel galvanized nut M10 with washer Ø 21 / Ø 10.5
- 07. Closing flashing
- 08. Permanently plastic sealing compound
- 09. Self-drilling connector for steel sheets or rivet 4.0 x 8.0

Mounting of the cold store door Vertical cross-section





\triangleright LEGEND:

- 01. Coldstore panel GS insPIRe[®] CH / GS insPIRe[®] CH MAX
- 02. Cold store door
- 03. PVC insulation ring with steel insert
- 04. **PVC** mounting washer
- 05. Steel galvanized threaded bar Ø 10
- 06. Steel galvanized nut M10 with washer Ø 21 / Ø 10.5
- 07. Closing flashing
- 08. Concrete floor acc. to architectural design
- 09. Permanently plastic sealing compound
- 10. Self-drilling connector for steel sheets or rivet 4.0 x 8.0

SCALE 1:2.5



Example details of freezers and warehouse rooms constructed with sandwich panels **GS insPIRe® CH** / **GS insPIRe® CH MAX**

Mounting the coldstore panels. Rooms with negative temperature	023
Corner of the freezer wall. Option I	024
Corner of the freezer wall. Option II	025
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Corner of the wall panel and the roof panel	027
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Suspension of coldstore panels. Option II	030
Joining the partition wall with the roof	031
Freezer at the socle of the external wall. Option I	032
Freezer at the socle of the external wall. Option II	033
Partition wall at the floor. Option I	034
Partition wall at the floor. Option II	035
Mounting the freezer door. Horizontal cross-section	036
Mounting the freezer door. Vertical cross-section	037

▷ Mounting the coldstore panels

GÓR-STAL SANDWICH PANELS

Rooms with negative temperature



Corner of the freezer wall Option I





Corner of the freezer wall Option II





Coldstore sandwich panel **GS insPIRe^{\circ} CH / GS insPIRe^{\circ} CH MAX**



D Joining chambers with different temperatures



Coldstore sandwich panel GS insPIRe[®] CH / GS insPIRe[®] CH MAX Corner of the wall panel and the roof panel





LEGEND:

- 01. Coldstore panel GS insPIRe[®] CH / GS insPIRe[®] CH MAX
- 02. Flashing external corner
- 03. Flashing internal corner
- 04. Polyurethane mounting foam
- 05. Vapour control layer bitumen tape or polyethylene foil
- 06. Permanently plastic sealing compound
- 07. Self-drilling connector for steel sheets or rivet 4.0 x 8.0



D Mounting the coldstore panels to the roof support



Suspension of coldstore panels Option I





Suspension of coldstore panels Option II





Coldstore sandwich panel GS insPIRe[®] CH / GS insPIRe[®] CH MAX D Joining the partition wall with the roof





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Freezer at the socle of the external wall Option I





Freezer at the socle of the external wall Option II











Partition wall at the floor Option II











▷ LEGEND:

- 01. Coldstore panel GS insPIRe[®] CH / GS insPIRe[®] CH MAX
- 02. Freezer door
- 03. **PVC** insulation ring with steel insert
- 04. **PVC** mounting washer
- 05. Steel galvanized threaded bar Ø 10
- 06. Steel galvanized nut M10 with washer Ø 21 / Ø 10.5
- 07. Closing flashing 08. Permanently plastic sealing compound
- 09. Self-drilling connector for steel sheets or rivet 4.0 x 8.0

Mounting the freezer door Vertical cross-section





 \triangleright LEGEND:

- 04. **PVC** mounting washer 05. Steel galvanized threaded bar Ø **10**
- 06. Steel galvanized nut M10 with washer Ø 21 / Ø 10.5
- 07. Closing flashing 08. Floor acc. to architectural design
- 09. Permanently plastic sealing compound 10. Self-drilling connector for steel sheets or rivet **4.0 x 8.0**

SCALE 1:2.5

Damage free installation of sandwich panels with VIAVAC vacuum lifters



▷ NOTE!

The following figures are illustrative and only show examples of machine configurations. Maximum load capacity of machines **Viavac = 1000 kg**. The machines have no restrictions on the length of the panel being lifted.

Use: for mounting roof and wall panels in vertical and horizontal layout.

The selection of a particular device from the **VIAVAC** offer depends on the type and extent of the material being lifted and the specificity of a specific installation. To eliminate the risk of damaging the panel during its transfer, always follow the instructions given by the appropriately trained technical department of the company dealing with the rental of **VIAVAC** machines. Therefore, please contact **VIAVAC** for detailed information on the selection of machines and instructions for specific installation.

Contact: tel. +48 68 384 39 08 http:www.viavac.pl

Scheme No. 1. Horizontal installation of a wall panel using the GlassBoy machine

 \bigcirc 1a. situating the machine and its attachment to the panel





 \bigcirc **1b.** lifting the machine together with panel





Copyright VIAVAC

Damage free installation of sandwich panels with VIAVAC vacuum lifters



 \bigcirc 1c. changing the angle of the machine and transporting the plate to the place of installation





[ig> 1d. installation of panel on the wall and detachment of the machine





Damage free installation of sandwich panels with VIAVAC vacuum lifters



- ▷ Scheme No. 2. Horizontal installation of a wall panel using the CladBoy machine
 - \bigcirc 2a. situating the machine and its attachment to the panel





▷ 2b. lifting the machine together with panel







Damage free installation of sandwich panels with VIAVAC vacuum lifters



 \bigcirc 2c. change of the angle of the machine and transporting the panel to the place of installation





 \bigcirc 2d. installation of panel on the wall and detachment of the machine



Damage free installation of sandwich panels with VIAVAC vacuum lifters



- ▷ Scheme No. 3. Vertical installation of a wall panel using the GlassBoy machine
 - \bigcirc 3a. situating the machine and its attachment to the panel





○ 3b. lifting the machine together with panel



Damage free installation of sandwich panels with VIAVAC vacuum lifters



▷ Scheme No. 3. Vertical installation of a wall panel using the GlassBoy machine





 \bigcirc 3a. situating the machine and its attachment to the panel







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Damage free installation of sandwich panels with VIAVAC vacuum lifters



 \bigcirc 4c. change of the angle of the machine and transporting the panel to the place of installation



 \bigcirc 4d. installation of panel on the wall and detachment of the machine





Damage free installation of sandwich panels with VIAVAC vacuum lifters



▷ Scheme No. 5. Sample configuration of CladBoy machine for vertical installation of long panels



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Damage free installation of sandwich panels with VIAVAC vacuum lifters



○ Scheme No. 7. Installation of a roof panel using CladBoy machine

 \bigcirc 7a. situating the machine and its attachment to the panel





Damage free installation of sandwich panels with VIAVAC vacuum lifters



ig> 7b. installation of panel on the roof and detachment of the machine Copyright VIAVAC PAGE: 49



▷ ACCESSORIES

The supplementation of the lightweight housing system from sandwich panels is made of flashings, fasteners and sealing tapes.

D FLASHINGS

Gór-Stal is equipped with a profiler able to produce steel sheet flashings up to **1,0 mm** thick and **6,0 m** long, in cataloguetypical or custom-made shapes. Available thicknesses and standard colours of the sheets are provided in the table below. The flashings are secured for transportation by means of foiling the external layer.

ATTENTION:

- it is recommended that the flashing be fastened every 30 cm with self-drilling screws to steel sheets or rivets

Sheet thickness [mm]	Sheet weight [kg/m²]	Length of standard flashings [m]	Available length of flashings [m]	Sheet standard RAL colours
0,50	4,00			3000, 5010, 6011, 7016,
0,70	6,00	3,0 and 6,0	2,0 - 6,0	9007, 9010
1,00	8,00			zinc coating

\triangleright seals

We supply sealing tapes presented in technical solutions in this catalog and in other dimensions at the customer's special request: self-adhesive polyurethane (**PUS**, **PURS**), polyethylene (**PES**) and butyl. As the freezing chambers are made as sealed rooms, it is necessary to prevent negative pressure during freezing and defrosting by installing pressure equalizing valves.

\square FASTENERS

GS insPIRe[®] **CH / GS insPIRe**[®] **CH MAX** sandwich panels can be attached to steel, reinforced concrete and wooden structures with the use of dedicated fasteners. In the case of cold rooms (t > 0 ° C), stainless steel self-drilling screws can be used. In freezing chambers, it is necessary to use connectors to prevent freezing and condensation. **PVC** nuts with steel bolts, polyamide bolts or screws and the plastic suspension system are suitable for this purpose.

System connectors are presented in the tables below.

Sandwich pan	el type and thickness [mm]	Fastener					
	stainless steel self-	drilling screws					
	100	stainless screw 5,5/6,3x150					
Coldstore panel	120	stainless screw 5,5/6,3x170- 175					
/ GS insPIRe CH MAX	160	stainless screw 5,5/6,3x 195-210					
	200	stainless screw 5,5/6,3x225-250					
	thermo-insulating mo	unting elements					
Coldstore papel	PVC mounting nut with washer - M8, M10, M12						
GS insPIRe CH	PVC mounting nut with steel insert and washer - M8, M10, M12						
/ GS INSPIKE CH MAX	polyamide mounting screw - M10, M12						

Additional elements

Catalogue of flashings



▷ Flashing OB-01 outer corner



Additional elements

Catalogue of flashings



Flashing OB-36 U channel section

No.	symbol	S [mm]	α [°]	L[mm]	Weight [kg]
	Standard – stee	el sheet 0,5	mm thick		
01	OB-36/40	40			4,18
02	OB-36/60	60		6000	4,66
03	OB-36/80	80			5,14
04	OB-36/100	100	-		5,62
05	OB-36/120	120			6,10
06	OB-36/160	160			7,06
07	OB-36/200	200			8,02
	Unusual from s	heet meta	l with a thi	ckness of 0.	5 or 0.7 mm
08	OB-36/ S= /	L=			



NOTE:

Not described angles should be made as a right angle.

The use is described in detail on page -

▷ Flat metal sheets

width	available thicknesses	typical lengths	panel used **		
[mm]	[mm]	[mm]	external facing	internal facing	available colours
1073			GS insPIRe® S thickness 40 mm module 1000	GS insPIRe [®] S thickness 40 mm module 1000, GS PIR D	
1108	0,5 i 0,7*	3000 i 6000	GS insPIRe [®] S (apart from a thickness of 40 mm) module 1000, GS insPIRe [®] CH module 1000	GS insPIRe [®] S (apart from a thickness of 40 mm) module 1000, GS insPIRe [®] U, GS insPIRe [®] CH module 1000	compatible with plate tables
1183]		GS insPIRe [®] U, GS PIR D	-]
1250			GS insPIRe® S module 1140, GS insPIRe® CH module 1140	GS insPIRe [®] S module 1140, GS insPIRe [®] CH module 1140	

*- offered upon special order ** - to avoid the difference in colour, it is recommended to choose metal sheet width appropriate to the kind of panel used

Documentation

Drder form of

SANDWICH PANELS



۹ بر د	lo	of		Gór-Stal sp. z o.o. No. 11 Przemysłowa st. 38-300 Gorlice, Poland Tel./Fax: + 48 18 353 98 00 Account No: 79 1140 1081 0000 5859 5500 1001								
Сс	ommercial Terms	5:		Ordering pa	ary: (nam	e, company	address	, phone	/fax, TIN)			
Pa	yment method:											
Ad	vance (%):	payable unt	il:									
Fu	ll payment:											
Cro	edit limit:											
Re	marks:											
A٤	gent:			Delivery pla	ace: (reci	pient, addre	ess, city,	post co	de, phone	/fax)		
Plate type: Thickness [mm]: Plate profiling: GS insPIRe® S L - Linear		: Plate width [mm]:	Colour R	AL:	Quant	ity:	Net price Unit/value:					
lo.	GS insPIRe [®] S MAX GS insPIRe [®] U GS insPIRe [®] U MAX GS PIR D GS PIR D MAX GS insPIRe [®] CH	Ke [®] S MAX 440, 60, 80, 100, 120 Ke [®] S MAX 60, 80, 100, 120, 140 Ke [®] U 40/80, 60/100, 80/120 Ke [®] U MAX 120/160, 150/190, 160/200 MAX 100, 120, 160, 200	M - Microfiltere F - Wavy R - Grooved T - Trapezoidal P - Flat	1000 1140								
1	GS insPIRe [®] CH MAX		ext. in		ext.	int.	L. [m]	pcs.	EUR/m ²	EUR		
2												
3												
4												
5												
6												
7												
8												
9												
· ·												
0												
.0												
.0 .1 .2	1											
.0 .1 .2 .3												
0 1 2 3 4						1		1		1		
LO L1 L2 .3 .5						In total:	[m²].		[[10].			

Documentation

D Order form of



	no of		D To sandwich panels order: No								
n	0	OT	NO				_ OT				
> Si	upplier: (name, company	address, phone/fax, TIN)	Symbol	S [mm]	α[°]	Thickness [mm]	Length [mm]	Quantity [szt.]	Total weight	Colour RA	
_			OB-01								
G	ór-Stal sp. z o.o.		OB-02								
No	o. 11 Przemysłowa st.		OB-18	_	-						
38	8-300 Gorlice. Poland		L-01	-							
Te	el./Fax: + 48 18 353 98 0	0	L-02	-	-						
Ac	ccount No: 79 1140 1081	L 0000 5859 5500 1001	L-03	-	-						
			P-01	-	-						
6	mmercial Terms:		P-02		-						
			N-01		-						
Pay	ment method:	1									
Adv	/ance (%):	payable until:									
Full	l payment:										
Cre	dit limit:										
Ren	narks:										
0	doring por (
or	uering pary: (name, con	npariy address, phone/fax, TIN)								<u> </u>	
De	livery place: (recipient	, address, city, post code,									
	phone/fa:	х)									
			╡┝───								
Flas	shing length: 6 m.										
Def	$fault\alpha = 90^{\circ}$										
Sha	ape of flashing acc. to tech	nological catalogue									
Ord	lering Party's signature				I	1	Total:				
							Net price:				
							Net value:				
			ACCESSORIE	S	Туре		Size [mm]	Quantity [pcs./l.m] Colour RAL		
			Bolts fixing	he plate	Steel G	T6					
			to the struct	ure	Steel G	12 Concrete					
			Screws for fl	ashings	**300 /	concrete					
			Rivets	-							
			Gasket		PE						
			Gasket		PES						
			Gasket		105					-	
			Saddle wash	er	35-35		-				
			Washer		Pm1		-				
			Covering cap	IS							
			Connector		ALF				1	1	

Documentation

D Order form of

INDIVIDUAL FLASHING



No of Agent: Ordering pary: (name, company address, phone/fax, TIN)					Gór-Stal sp. z o.o. No. 11 Przemysłowa st. 38-300 Gorlice Tel./Fax: + 48 18 353 98 00 Account No: 79 1140 1081 0000 5859 5500 1001 Delivery place: (recipient, address, city, post code, phone/fax)					
										۱٥.
		1	1			1	<u> </u>	1	1	
Remark:					Remark:					
)1. - - - -	Boundary condition unfolding -> min 1 shelf width -> min width of the notch bending angle -> n with an unfolding shorten the proces	is: 14 mm 25 mm ing/bend -> n nin 45° of above 350 sing to 3.0 mb	nin 15 mm mm, it is recomm p.	lended to						
)2. 1 d	The flashings will b drawings and their o	e made in acc dimensions.	ordance with the	above						
						Ordering Party's signature:				

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