



Sandwich-type insulated panel

Prefabricated sandwich-type insulated panel **MFG-GS**

The Cosma Impianti insulating panel is a prefabricated sandwich-type panel. It is a self-supporting panel consisting of two rigid skins, with a polyurethane foam core.

The parts are assembled by adhesion of the high-pressure injected polyurethane resins; the process is discontinuous and the forming of the panel, which gives the polyurethane rigidity, occurs in a specific press with perfectly flat surfaces heated at a constant and controlled temperature.



THE PANEL IS SPECIALLY DESIGNED FOR THE CONSTRUCTION OF AGRI-FOOD STORAGE ROOMS, WORK ROOMS, INTERNAL AND EXTERNAL COLD ROOMS, CURING AND DRYING ROOMS, PROOFING ROOMS, CLEANROOMS, INDUSTRIAL FREEZERS AND DRYING OVENS.



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Technical data, panel dimensions and thicknesses **MFG-GS**

[*] The standard data given in the table, more details are available in the relevant declarations of performance, is guaranteed by the results of periodical audits by Istituto Giordano S.p.A. [EC Notified Body no. 0407] which issues the CE certificate of conformity **with certifying system 1**, only after assessing the reports of the laboratories inside and outside the firm (mechanical compression, tension, shear tests, etc.).

The UNI EN 14509 standard - Self-supporting double-walled insulating panels with metal claddings [Industrial products] - provides for compliance with specific regulatory requirements concerning the physical-mechanical performance of the insulation panel according to the various uses (internal or external wall panels, ceiling etc.). The results of laboratory tests are the result of reworking required by the standard, which provide for the declaration, which is pejorative, of the fractile value of the whole series of tested specimens. Cosma Impianti, in some cases such as tensile strength, further reduces the declared value by inserting the concept of extended uncertainty with reference to the measurement instrumentation used in the laboratory.

Description	U/M	MFG (*)			MFG - GS				
		40	60	80	100	120	150	200	240
Thickness	mm	40	60	80	100	120	150	200	240
Mass	Kg/m ²	11,02	11,82	12,62	13,42	14,22	15,42	17,42	18,16
Density	Kg/m ³	40			40				
Thermal conductivity λ	W/mK	0,023			0,023				
Thermal conductivity [λ aged value]	W/m ² K	0,57	0,39	0,29	0,24	0,20	0,16	0,12	0,10
Tensile strength	Mpa	0,17			0,15				0,08
Compressive strength	Mpa	0,17			0,17				
Water vapour permeability		Impermeable			Impermeable				
Standard fire reaction		C - s3,d0			NPD				
Improved fire reaction		NPD	B - s2,d0		B - s2,d0				
Characteristics of polyurethane foam		Foaming agent HFC134a			Foaming agent HFC134a				
		Closed cell content >90%			Closed cell content >90%				
Pitch	mm	1200	1190		1190 (MFG) - 1283 (GS)				
Maximum length of straight section	mm	13600			13600				



Design tolerances

MFG-GS

For the terminology used, refer to Annex D - Dimensional tolerances - and the respective figures of UNI EN 14509.

(*) The tolerance of the dimensional characteristic is more restrictive than the reference standard.

Reference Standard	Dimensional characteristic	Maximum permissible tolerance in accordance with COSMA IMPIANTI standards	
D.2.1	Panel thickness [*]	D: ± 2 mm	
D.2.2	Deviation from flatness [*]	For L = 700 mm - Deviation from flatness 0.6 mm	
D.2.3	Depth of metal profile (ribs)	Not applicable	
D.2.4	Depth of stiffeners and light profiling	ds \leq 1 mm	$\pm 30\%$ of ds
		1 mm < ds \leq 3 mm	$\pm 0,3$ mm
D.2.5	Panel length	L \leq 3000 mm	± 5 mm
		L > 3000 mm	± 10 mm
D.2.6	Cover width of the panel	W = 1190 mm	± 2 mm [MFG]
		W = 1224 mm	± 2 mm [GS]
D.2.7	Deviation from squareness	s \leq 0.6% of nominal cover width W	
D.2.8	Deviation from straightness (on length) [*]	0,1 mm/m	
D.2.9	Bowing	2 mm per metre length	max 20 mm
D.2.10	Profile pitch [p]	If h \leq 50 mm	± 2 mm
D.2.11	Width of the ribs [b1] and valleys [b2]	For b1	± 1 mm
		For b2	± 2 mm

Skins and finishes

Skins

- DX51D prepainted steel sheet, 0.55 mm thickness, ribbed or smooth;
- AISI 304 stainless steel sheet, 0.5 mm thickness, ribbed;
- AISI 316 stainless steel sheet, 0.5 mm thickness, ribbed or smooth;
- Fiberglass.

Panels with skins of thicknesses different from those indicated above can be produced on request.

Finishes

For steel sheet skins:

- Zinc coating;
- Zinc coating with food-grade prepainting;
- Zinc coating with food-grade plastic coating.

For stainless steel sheet skins:

- Finish 2B.

For fiberglass skins:

- FOOD-GRADE GELCOAT finish.

To ensure proper adhesion of the insulation, STAINLESS STEEL skins are treated with a special primer. The application of a protective plastic film (to be removed during assembly) is provided for prepainted, plastic coating and stainless steel finishes.

Panels with finishes different from those listed above can be produced on request.

Rib

Our production standards provide for rib with a depth of 1.4 mm. On request, however, is possible to have the smooth surface or rib with the following characteristics: height 2 mm, large rib width 40 mm, small rib width 25 mm, number of ribs per panel 13.



Datasheets of finishes **MFG-GS**

Zinc coating

Applications	Cycle consisting of a hot-galvanised steel support, passivated with a colourless transparent organic film-forming product. Corrosion protection with aesthetic appeal, suitable for the attachment of polyurethane foams.	
Ageing	Humidistat	500 hours - Surface: no alteration
	Saline mist	150 hours - Surface: no alteration
Surface resistance	Foam-adhesion	Excellent
Film thickness	Amount of paint	1,6 ± 0,6 g/m ²

Zinc coating with food-grade prepainting

Applications	Basic coating (for indoor applications)	
Description	Thickness	25 micron
	Brilliance [Gardner 60°]	80 GU
	Appearance	Liscio
Performance	Coating adhesion	≤ 2 T
	Resistance to cracking on bending	≤ 3 T
	Surface "pencil" hardness	Da HB ad H
	Salt spray test	240 ore
	Resistance to solvents:	
	- Aliphatic and alcoholic	Very good
	- Ketonic	Poor
	- Aromatics	Good to very good
	Resistance to mineral oils	Very good

Zinc coating with food-grade plastic coating

Description	Type	Precoated with PVC film
	Finish	Smooth and suitable for food contact
	Support	Hot galvanised steel
	Thickness	0,50 mm
	Film thickness	110 micron
	Colour	White 77 SA
Performance	Maximum temperature of use	da -20°C a +60°C
	Surface "pencil" hardness	HB
	Corrosion resistance	360 h max penetration 2 mm no blisters
	Resistance at 100% relative humidity	1000 h no formation of blisters
Cleaning	Use only mild soap and water to clean the surface. It is advisable to use a soft cloth, making sure to rinse and dry thoroughly. Surface stains can be removed using mineral turpentine or methylated spirits. Stains caused by the absorption of substances by the PVC film can no longer be eliminated. N.B. Do not use of solvents such as acetone, toluene, etc., as they have an aggressive action on PVC.	

Fiberglass coating (CE marking is not applicable)

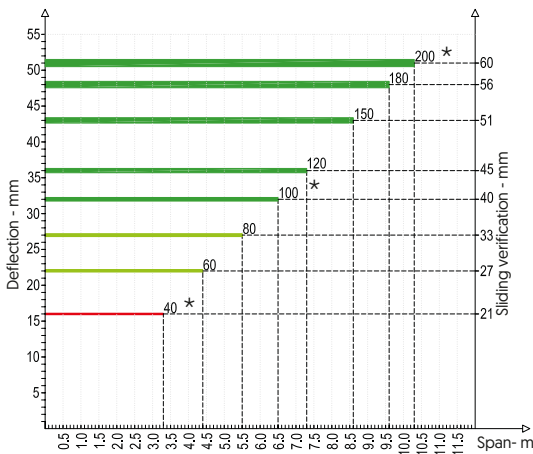
Description	Composition	Mat 700 g/m ²
	Nominal thickness	1,8 mm
Mechanical properties	Glass content	28,0 %
	Hardness	40-45° Barcol
	Tensile strength	90 MPa
	Elastic modulus	7,2 GPa
	Breaking elongation	1,5 %
	Weight	2,5 Kg/m ²
	Density	1,4 g/cm ³
	Coefficient of thermal expansion	24-28 10 ⁻⁶ /°K



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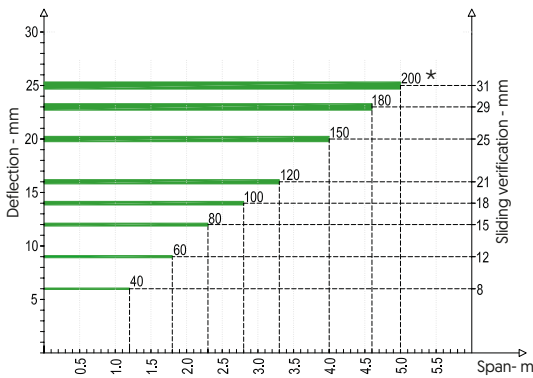
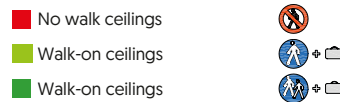
Load-bearing capacity of panels MFG-GS

[*] Results obtained from laboratory tests in accordance with EN 14509 § A.5; the data is obtained using the characteristic value, known to be more restrictive, of the shear modulus [monitored quarterly]. The other data is obtained by applying Annex E of UNI EN 14509.
NB: On customer request, our designers are able to simulate/check the mechanical resistance of panels configured and/or stressed differently.



Cold rooms installed INSIDE buildings

Graph of load-bearing capacity for ceiling application in industrial cold rooms and air-conditioned work rooms installed inside of buildings. Calculation of the load takes into account a depression in the room of 30 kg/m² (UNI 10933), whereas the thermal gradient is disregarded since it exerts an action favourable to the stress.

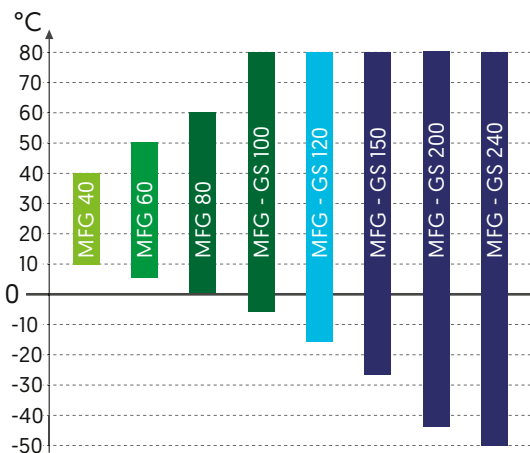


Cold rooms installed OUTSIDE buildings

Graph of load-bearing capacity for application in covering of industrial cold room, installed outside of buildings; data relevant to the external facing exposed to T < 65 °C (bright areas), and calculated with a room depression of 30 kg/m² + 130 kg/m² of snow + 7 kg/m² of sheath.



Use



The following table guides the customer in the choice of the thickness and the type of junction of the Cosma Impianti panel based on the final use.

- Wall and false ceiling panelling.
- Positive temperature cold rooms. Drying and seasoning rooms.
- Positive temperature cold rooms. Drying ovens [*].
- Low temperature cold rooms. Drying ovens [*].
- Low temperature cold rooms and freezing tunnels. Drying ovens [*].

[*] In case of outside installation, with low temperature, use panels with GS joint.