



# **PLASTBAU® METAL**

## **FLOORS & ROOFS SLAB**

ICF - Insulated Concrete Form



PRODUCT CATALOG

**POLIESPANSO**



# VARIABLE GEOMETRY SELF-SUPPORTING PANEL WIDTH 60 CM

**PLASTBAU®  
METAL  
PANEL  
SECTIONS**

**PLASTBAU® METAL  
PANEL VARIABLE  
GEOMETRY SECTIONS  
ARE MEANT TO FIT TO  
THE NEEDED SPAN,  
INSULATION AND LOAD  
CAPACITY OF THE  
FLOORS SLAB - SELF  
SUPPORTING CAPACITY  
UP TO 2 MT WILL ALLOW  
THE WORKERS LAYING  
STEEL REINFORCEMENT  
AND CONCRETE  
CASTING.**



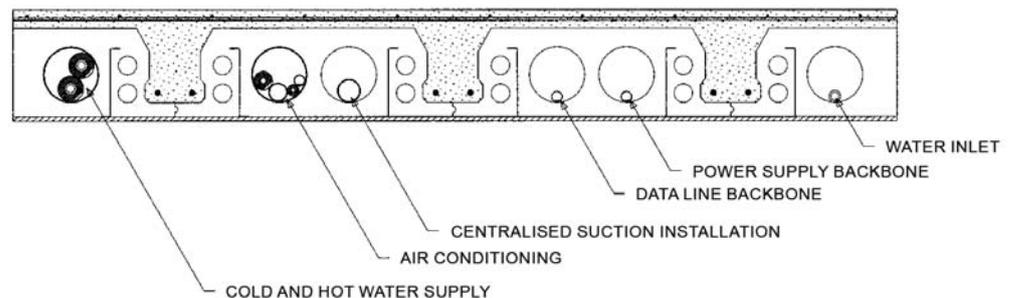
Its high performances depend on the perfect collaboration between EPS and galvanized metal profiles, properly drilled and shaped. Such a perfect mix between polystyrene mass and internal metal inserts allow panels, even though very light ( $\text{Kg/m}^2$  7), to become self-supporting and rigid enough to support initial loads, such as fresh concrete, core grids, workers, etc.

Plastbau® Metal allows to easy replacing old-fashioned floors slabs with no more weight added to structures and foundations, extremely easy and fast to install as each panel unit can be moved manually.



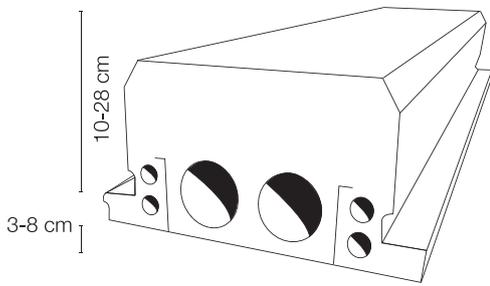
It is possible furthermore, to optimize slab thicknesses as the installations can be all fitted inside the panel longitudinal holes, thus reducing the floor intrados thickness to the bare minimum.

Matching and jointing each panel (male/female), an insulated under-beam section is created, where to host core grids, reinforcement steel and concrete casting getting rid of thermal bridges.



The above suggested and laboratory data in the applications of construction site may undergo ways that depending on the conditions of installation. The user must verify the suitability of the product, taking all responsibility for its use.

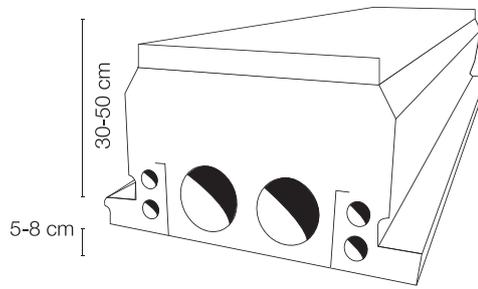
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Range of UNDER-BEAM panel section (3-8 cm)

Range of BEAM panel section (10-28 cm)

**Basic sections range**



Range of UNDER-BEAM panel section (5-8 cm)

Range of BEAM panel section (30-50 cm)

**Big span & High load capacity sections range**

Plastbau® technology allows to schedule the panels LENGTH and SECTIONS sizes already during production in order to fit to the needed SPAN, thermal insulation U coefficient (UNDER-BEAM SECTION) and to the needed H height of the structural beams (BEAM SECTION) WIDTH 60 CM

Plastbau® Metal is available in 3 different product Models



**Model I** - for internal plaster finishing with plaster-holder mesh installed; panels shall be coated at the intrados with a stretched, hot-dip galvanized metal grid as a plaster support, incorporated to the panel to avoid thermal bridges.

**I**  
**PLASTERING MODEL**



**Model C** - for internal dry finishing with built-in metallic profiles exposed with interaxis 30 cm - panels are not fitted with any metal grid as they are meant to be left raw or covered with gips boards, false ceilings or any kind of internal dry finishing.

**C**  
**DRY FINISHING MODEL**



**Model S** - for ground floor insulated crawl space - panels are manufactured of EPS only and thus they are not self-supporting; they are layed as crawl space on the ground floor to grant natural ventilation and insulation without thermal bridges. Layed on a sand-bed or as overlaid floor to pre-existing structures to be replaced.

**S**  
**CRAWL SPACE MODEL**

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## NEW BUILDINGS, LIGHT WEIGHT, MEANS SAFETY WHEN WORKING

If compared to a floor in clay/concrete mix or to plates, with the same thickness, the weight is cut about 100 kg per m<sup>2</sup>. It thus means a consistent saving of iron, concrete and labour. Repeated saving can be extended to the structure and building foundations too.

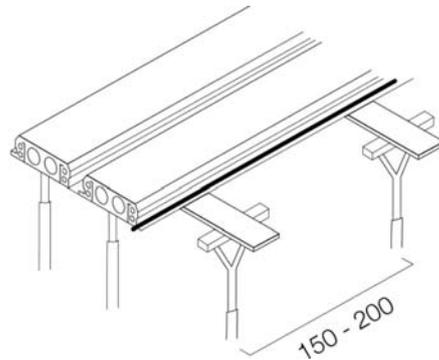
The Plastbau® Metal panel laying, whose weight accounts for about 7Kg/m<sup>2</sup>, is always manual and very fast. Infact a 5 linear meter panel, for a 3 m<sup>2</sup> floor slab, simply weights 21 kg, thus easily and safely handled within the building yard.

## RESTORATION OF OLD & ANCIENT BUILDINGS

It is possible to replace old-fashioned floors slabs with Plastbau® Metal with no more weight added on structures and foundations. What is more the unit manual handling does not require any lifting unit.

## SELF-SUPPORTING AND PEDESTRIAN TRAFFIC

Panels are originally self-standing, that is they can stand any weight (concrete casting, workers, reinforcement steel, etc.) with traditional and simple shoring system with prop supports at a maximum distance up to 2 meters.



Traditional shoring system



## INSULATION - NO THERMAL BRIDGES

One of the most important and unique product features. The continuous insulation depends on the jointing between panels with UNDER-BEAM male/female section profiles. As insulation is built-in the floor structure, the insulation is the best possible on the production line, according to the project requirements. Plastbau® Metal allows to reduce floors slab thickness to the bare minimum.

The U thermal transmittance values can vary at ease, from 0.59 W/m<sup>2</sup>K to 0.17 W/m<sup>2</sup>K.

Plastbau® Metal is an insulation material according to the standard EN 13163.

In the areas declared seismic, Plastbau® Metal floors slabs are highly recommended as they offer a consistently lower weight than traditional floors slabs. It is possible then to horizontally use the lightest possible floors with the same resistance, keeping in mind that the seismic intensity is proportional to the weight of the single building units. The use of such a floors slab system allows cutting the weight which is horizontally transmitted to the vertical structures, by 25%. In the case of recovery of earthquake damaged buildings, such a value is extremely important and positive.

## SEISMIC BEHAVIOUR

The REI fire resistance of Plastbau® Metal floors is tested by the CSI lab in Bollate MI at different structure height and exercise momentum. Test results are specified on the certifications. Any test proved at the core grid level, temperatures lower by about 35% in comparison with tables included in the standard CNVVF/ CCI UNI 9502.

## FIRE BEHAVIOUR

Plastbau® Metal floors slab reached a REI 180 fire resistance.

Plastbau® Metal floors slab exhibit intrinsic features depending on the deep attention paid to the sound output developed during the reference unit design, complying with what required by the regulations on the building passive sound requirements, as for the apparent sound proofing power ( $R'_w$ ) and the impact noise level index ( $L'_{n,w}$ , T). On the testing certificates it is specified, as for the specific finish and laying, that the floors slab comply with the minimum and maximum indexes of aerial and impact noise transmission imposed by the regulations in force. The designer using the Plastbau® Metal floors slab to comply with the regulations in force, should include a separation layer between the stiff surface (floor and block) suitable to limit transmission. The separation layer features would change according to the type of flooring and basic layers.

## SOUNDPROOFING

EPS is absolutely stable as for normal building materials, such as concrete, lime and plaster. EPS is even more stable at acid water solutions (35% HCl; 50% HNO<sub>3</sub>; 95% H<sub>2</sub>SO<sub>4</sub>), alkalis (sodium hydrate, potassium hydrate, ammonia) and alcohols (methyl and ethyl alcohols as well). It is even more stable to bitumen and water-based asphalt masses

## CHEMICAL FEATURES

The material ageing is the variation in time of its features. If EPS is used perfectly knowing its features, and therefore taking its chemical limits into account, its application last in time, with no change of its original features.

## STABILITY IN TIME AND AGEING



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## ENVIRONMENTAL ASPECTS

Advantages offered by expanded polystyrene (EPS) in terms of environmental impact are extremely important when the material life cycle is considered, from the raw material extraction to production, transportation, use up to recycling and disposal. When you have to replace the original insulations with EPS, it first of all means reduce digging the ground without removing non removable resources such as clay and quarry inert components. It also means cutting energy consumptions, and therefore pollution as well. In fact to manufacture 1 cubic meter of floor insulation, 196,000 kcal are required. To manufacture instead 1 cubic meter of PLASTBAU Metal panel, you only need 110,000 kcal. Eps furthermore does not hold any harmful gas for the ozone layer (CFC) and does not release any emission in time.

EPS benefits are also confirmed as for the consumption of fuels, carbon dioxide emission and energy saving supported by the material insulation features, thus avoiding and preventing any greenhouse effect. What is more EPS is entirely recyclable. It can be grounded and then mixed to manufacture lightening components for the building sector or it can be used as an inert to manufacture light concrete mortars. **Eco-compatibility** and **long-duration** subsidence requirement declarations on EPS (Sintered Expanded Polystyrene) are available drafted according the declarations issued by the certification bodies at the national level such as LCE, Life Cycle Engineering, IIP Istituto Italiano dei Plastici.



  
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- It reduces weights on walls and foundations
- It reduces horizontal weights in case of an earthquake
- No thermal bridge
- It is possible to design in a single package: the floor statics, REI, the thermal and sound proofing
- It allows to build floors with a large grid and big spans
- It allows to fit heating in the flooring while improving any performance
- It is available in three models, to lay plaster, false ceilings and ventilated / insulated crawl spaces

## STRUCTURAL ENGINEER AND DESIGNER



- It cuts costs thanks to its versatility
- It eases laying in refurbishing
- Manually fit with no means or special lifting units, mainly in the areas more difficult to be accessed
- It can yard times
- It improves the yard safety conditions (walking area and lower weight per person)

## BUILDING COMPANY



- Better comfort when living in healthy lofts
- Economic saving in the room conditioning both in summer and winter
- Better access to financing for a optimal & better thermal insulation
- It gets rids of the heat dispersions between rooms within the same building
- Higher safety in case of fire
- Higher safety in case of an earthquake

## FINAL USER



- It can be recycled
- It does not hold gases
- It cuts the CO2 emissions in the atmosphere
- It cuts the road transportation requirements as it is possible to transport a higher quantity at a time

## ENVIRONMENT



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## POLIESPANSO ICF CONSTRUCTION SYSTEM



FLOORS SLAB



WALL



PARTITION WALL

"We aim at producing building materials for more ecologically sustainable buildings, leading to a more consistent energy saving, as to provide for a better comfort to the building dwellers, with a higher laying safety and speed for the building constructors; higher certainty of the final result for the designer, engineer, construction company and final user."

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