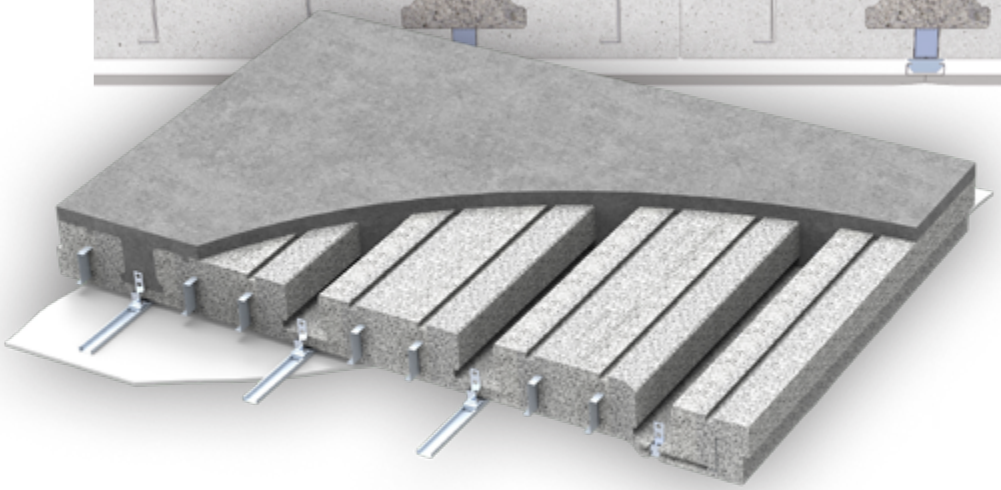
Kaldo®

IL TERMOSOLAIO



Thermopanels for floorings

PONTAROLO® ENGINEERING

EPS formwork panel for the construction of reinforced concrete floorings with built-in thermal insulation

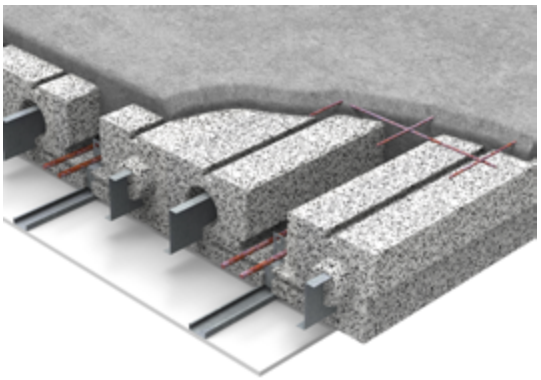
What is Kaldo?

KALDO is a high thermal performance flooring consisting of EPS hollow blocks designed and built for the construction of joist-type reinforced concrete floorings.

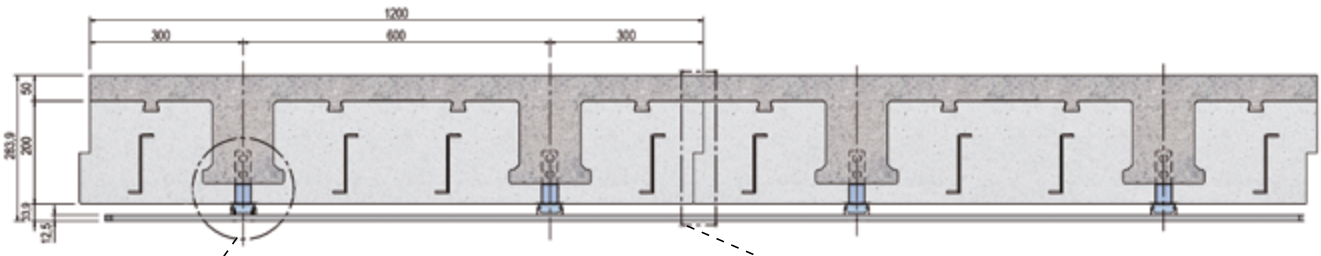
The panels are supplied on site at the project length and the dimensions of the joist are such as to be able to cover any clearance in the plan as the height and width can be varied as required. Kaldo is immediately self-supporting and, after placing of dividing strip props at the correct distance, can be walked on and the concrete of the flooring can be cast. Kaldo has been designed to always optimally satisfy the construction and operating requirements.

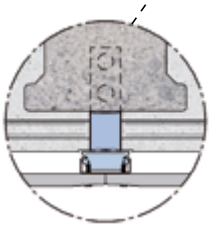
Why choose Kaldo?

- Kaldo is made to measure according to the dimensions desired by the designer, making it ideal for any type of plan. Furthermore, Kaldo can replace any flooring envisaged in the project (joist floor, omina type...), adopting the sizing of the latter;
- Kaldo is light to handle;
- Kaldo, arriving on site at the project length, is quick to lay;
- Kaldo, subject to the section divider provision, allows operators plus their equipment to walk on it in complete safety;•
- The extrados surface of Kaldo can accommodate systems and pipes and any tracks can be made quickly with the use of hot blade knives;
- Kaldo is poured without difficulty and the presence of the lateral shaping preserves the underlying area from grout seepage;
- Kaldo simplifies the application of plasterboard on load-bearing structures as it is equipped with a patented device that is directly embedded in the concrete pre-drilled for self-tapping screw with ø 4.2 mm;



- Kaldo is made of EPS, the most eco-sustainable material that exists! Made of 98% air and 2% material;
- Kaldo guarantees high thermo-acoustic performance which, when combined with other building systems, helps to achieve energy certification class A4 (or NZEB) to add comfort, value and economic value to the building.





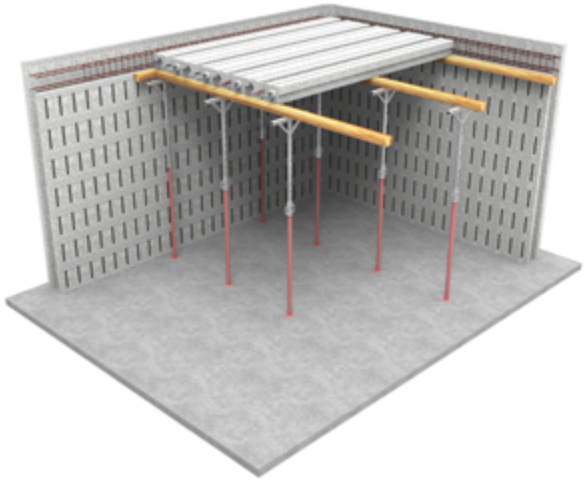
Kaldo is equipped with a patented device that allows the easy installation of plasterboard. The insert is already applied in the supply. The device is immersed in the cast to ensure load-bearing capacity even in the event of a fire.

The Kaldo flooring panels can be easily placed next to each other and have a particular shape that limits any grout seepage.

Table of the maximum centre distances of the dividing strips.

The table below shows the centre distances of the dividing strip props. In no case should this spacing exceed the limitsindicated in the table and, even in the presence of small openings, it is necessary to install at least one intermediate dividing strip props. The support feet must be sufficiently rigid and suitably braced.

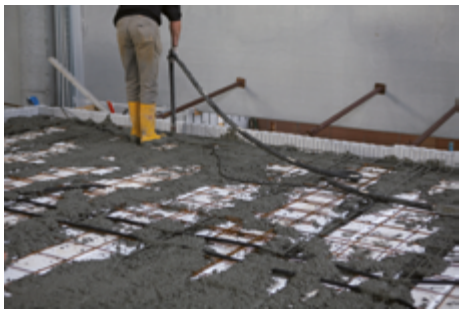
FLOORING OWN WEIGHT (kg/m²)	225	245	265	285	305	325
SECTION DIVIDER MAXIMUM DISTANCE (cm)	160	155	150	145	140	135



Installation

Kaldo arrives at the construction site at the project length and, due to its light weight, can also be unloaded from the truck by hand. The panels, which can be moved easily and safely even during the laying phases, must be arranged on a small number of section divider props. Their position can be corrected directly by hand, further speeding up the work.

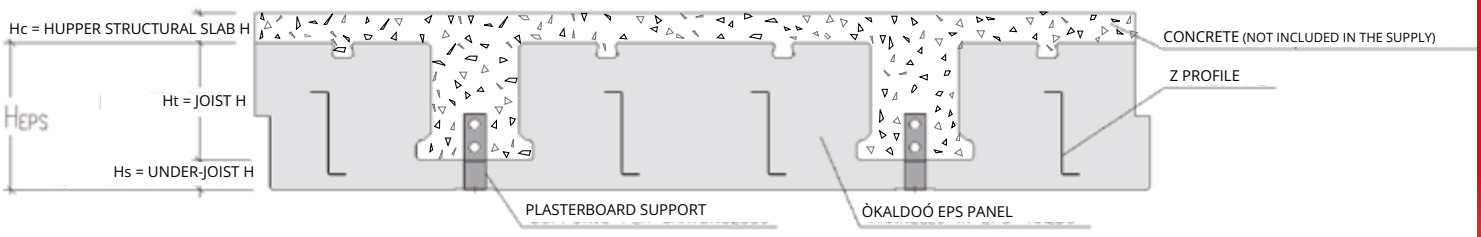
Correctly installed, Kaldo can be walked on; in this way the operators can proceed with placement of the necessary reinforcement and of the systems and can perform the casting operations. The casting must be performed by first filling the grooves of the panels and then on completion. The lateral shaping of the panels creates seals that preserve the underlying area from any grout seepage.Kaldo facilitates the application of plasterboard or the fixing of any load-bearing structure as it is equipped with a patented pre-drilled device fora ø 4.2 mm diameter self-tapping screw. This device is already applied in the supply and, following the casting, is incorporated into the concrete such as to guarantee the load-bearing capacity even in the event of fire.



Kaldo specification item

Kaldo® type thermal insulating flooring (for foot traffic, roofing or sanitary space) by Pontarolo Engineering S.p.A. consisting of formwork in EPS Cs(10) 100 class E to obtain a flooring structure with reinforced concrete beams according to the graphic tables. The joists will have a centre distance of 60 cm and the formwork will have no cavities inside the EPS. The flooring will be equipped with pre-drilled metallic supports, arranged at 50x60 cm intervals and incorporated in the concrete of the joist, for the rapid mechanical fastening of any type of cladding to the intrados, including REI type. The panels must be completed on site with the lower and upper metallic reinforcement (B450C), the upper electro-welded mesh (B450A) and with class C concrete _____/_____ on the basis of the provisions of the structural design of the flooring. The thermal transmittance of EPS and concrete will be equal to _____ W/m2K.

The dimensions of the flooring will be: under-joist _____ cm, joist height _____ cm, upper structural slab _____ cm



Frequent sizings

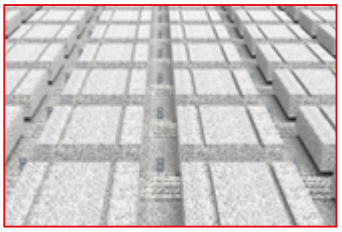
The table below shows just a few examples of the available sections. The height of the under-joist (Hs) and of the joist (Ht) can vary, thus responding to all design requirements. The thickness of the upper structural slab in reinforced concrete will depend on what is prescribed in the structural design of the slab itself and in any case not less than 4 cm. The complete table with all the available heights can be downloaded from the website www.pontarolo.com

FLOORING HEIGHT $H_s + H_t + H_c$ (cm)	STRUCTURE HEIGHT $H_t + H_c$ (cm)	TOTAL HEIGHT H_{tot} (cm)	CALCULATION MAXIMUM CLEARANCE (cm)	WIDTH PANEL WEIGHT 1,20 m (kg/m)	FLOORING WEIGHT WITH UPPER STRUCTURAL SLAB (kg/m²)	CONCRETE CONSUMPTION WITH UPPER STRUCTURAL SLAB (m³/m²)	THERMAL TRASMITTANCE WITH CONCRETE (W/m²K)	THERMAL TRANSMITTANCE EPS ONLY WITH con λ_d (W/m²K)
4 + 16 + min. 4	20	24	500	8,3	197	0,0757	0,339	0,326
6 + 16 + min. 4	20	26	500	8,7	197	0,0757	0,269	0,253
*8 + 16 + min. 4	20	28	500	9,2	198	0,0757	0,227	0,211
10 + 16 + min. 4	20	30	500	9,7	198	0,0757	0,199	0,184
4 + 20 + min. 4	24	28	600	9,0	217	0,0837	0,309	0,301
6 + 20 + min. 4	24	30	600	9,5	218	0,0837	0,245	0,232
*8 + 20 + min. 4	24	32	600	10,0	218	0,0837	0,207	0,194
10 + 20 + min. 4	24	34	600	10,5	219	0,0837	0,182	0,169
4 + 24 + min. 4	28	32	700	9,8	238	0,0917	0,287	0,284
6 + 24 + min. 4	28	34	700	10,3	238	0,0917	0,227	0,217
*8 + 24 + min. 4	28	36	700	10,8	239	0,0917	0,192	0,181
10 + 24 + min. 4	28	38	700	11,2	239	0,0917	0,169	0,157
4 + 28 + min. 4	32	36	800	10,6	259	0,0997	0,269	0,271
6 + 28 + min. 4	32	38	800	11,0	259	0,0997	0,213	0,205
*8 + 28 + min. 4	32	40	800	11,5	259	0,0997	0,180	0,171
10 + 28 + min. 4	32	42	800	12,0	260	0,0997	0,158	0,148

*Minimum quantities of 300 m2 and minimum delivery time of 20 working days are required for floorings with 8 cm thick under-joists. The thermal transmittance of the EPS panel with λd was calculated considering the EPS panel alone and making the weighted average using the thicknesses of the EPS in the various sections and the declared thermal conductivity (λd) equal to 0.036 W/mK and reported in the CE marking. The thermal transmittance with concrete was calculated by making the weighted average using the thicknesses of the EPS and of the concrete in the various sections and the calculated thermal conductivity of the EPS, obtained by increasing the declared λ (λd) by 10%, equal to 0.036 W/ mK and reported in the CE marking, and of the concrete.

Kaldo bidirectional flooring

For the construction of bidirectional floorings with crossed joists in reinforced concrete and with incorporated thermal insulation, the Kaldo bidirectional thermopanel in EPS is also available.
For further information, visit the website or contact the company.



Customer service

Our Technical Department is at your disposal to provide assistance during the design phase.
Send us the plan of the flooring in dwg or .dxf format by e-mail to assistenza@pontarolo.com. Our technicians will provide you with the necessary advice to proceed with a correct order and correct installation.

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