

CUPOLEX[®]

Aerated concrete floors elements



Plastic dome concrete forming system for aerated floors



contributes to the activation of leed credits

PONTAROLO[®]
ENGINEERING

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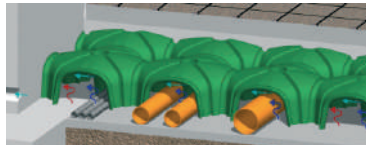




Ventilated floor formed by Cupolex elements that mutually interlock together to form the concrete cast-in-place structure

Why choose Cupolex?

- Can replace costly filling materials;
- Protects the house from Radon Gas penetration;
- Protects against humidity penetration;
- Creates a naturally or mechanically ventilated crawl space;
- Gives room to MEP installation;
- Easy and quick installation;
- Economical compared to traditional filling systems;
- High structure bearing capacity thanks to the dome shape;
- Can be finished as any traditional slab;
- Low concrete consumption compared with raised slabs;
- Adaptable to any project;
- High vibration absorption thanks to the central cone;
- Safe during installation;
- Made entirely in recycled plastic.



Available modules*

Cupolex is available in the heights (cm):

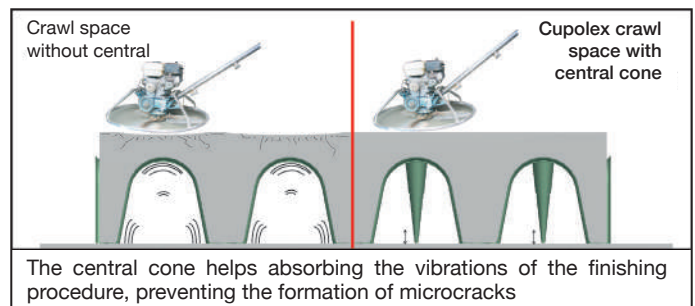
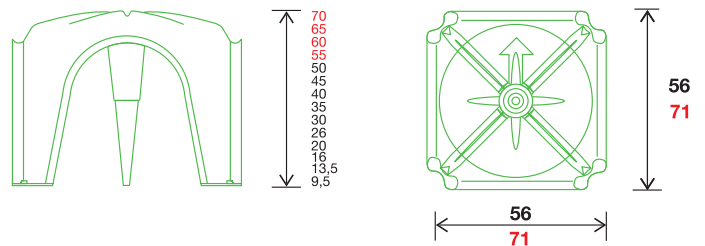
9,5 - 13,5 - 16 - 20 - 26 - 30 - 35 - 40 - 45 - 50

55* - 60* - 65* - 70*

* Measures without central cone

* for greater heights use Cupolex Rialto, the forming system with variable height up to 200 cm

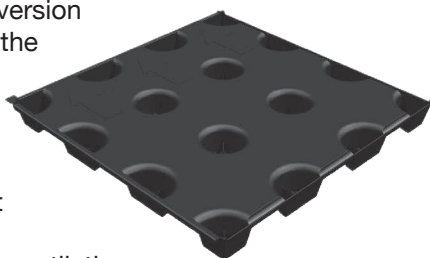
Technical dimensions (cm)



Cupolex WINDI elements are specific for small ventilation spaces and severe humidity problems. The modules geometry and connection creates a great barrier against raising damp and humidity

Cupolex Windi

Cupolex WINDI is the version specific for protecting the slab from humidity and rising damp. It is available in 5 and 10 cm height and it is ideal for basement renovations, terraces insulation or thin slabs ventilation.

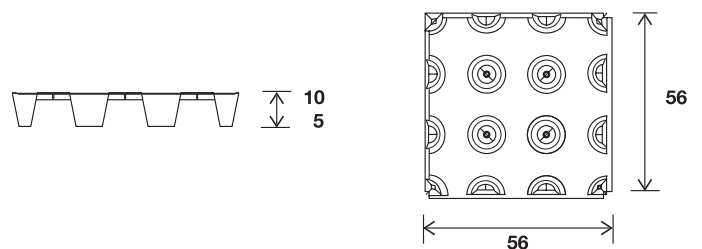


Available modules

Cupolex WINDI is available in the heights (cm):

5 - 10

Technical dimensions (cm)





BETONSTOP is a Cupolex anchillary product for the lateral closure of the forming system, adapting it to any project layout

Why use Betonstop

- It allows you to adapt the forming system to all project widths, working as an adaptable extension;



- It allows to cast at the same time both the foundation beams and the slab, saving time and lowering the costs;
- No need to cut the Cupolex elements;
- No Cupolex waste;



- Improved cast resistance compared to Spodina closing element;



- Easy ventilation pipe installation;
- Lowers the concrete consumption;

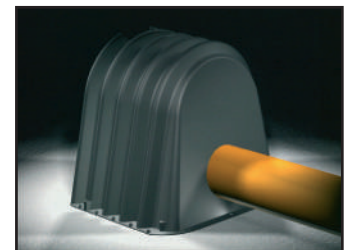
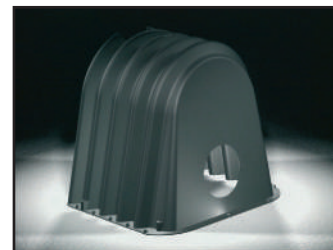
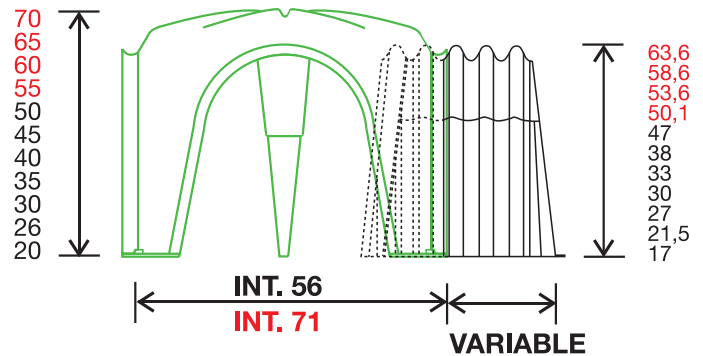


Available modules

Beton Stop is available for Cupolex heights (cm):

20 - 26 - 30 - 35 - 40 - 45 - 50 - 55 - 60 - 65 - 70

Technical dimensions (cm)



Cupolex and Betonstop specification

Form a reinforced concrete floor slab with an aerated sub-slab void by installing CUPOLEX plastic stay-in-place concrete forms by Pontarolo Engineering SpA of San Vito al Tagliamento on a prepared base. CUPOLEX forms have plan dimensions of 56x56 cm (or 71x71 cm for forms with heights between 55 and 70 cm) and a height of cm with a curved or flat dome shape and a central vertical cone (forms with heights from 55 to 70 cm have no central vertical cone). Class C..... concrete is placed on the interlocking forms to form columns with a centre-to-centre spacing of 56cm each way (71 cm for elements with a height of between 55 and 70 cm, 28 cm for elements with a height of 9.5). The resulting sub-slab void will be suitable for ventilation and/or running pipes. If applicable, the BETONSTOP accessory will be used to close the perimeter of the Cupolex forms to prevent the flow of concrete into the void during placement and to fill any space in the project area where whole CUPOLEX forms cannot fit.

Price including the placement and finishing of concrete and any other charges and specialist work to ensure completion in a manner consistent with the level of care normally exercised by other skilled contractors in the community (excluding reinforcing steel and the preparation of the base below the forms):

MEASUREMENTS: per square meter of floor slab as measured on plan.

CUPOLEX H cm with concrete thickness of cm

PRICE: €/sqm.

Concrete consumption (m³/m²) at Cupolex top

Cupolex														Windi	
9,5	13,5	16	20	26	30	35	40	45	50	55	60	65	70	5	10
0,014	0,030	0,030	0,035	0,035	0,042	0,045	0,060	0,064	0,065	0,069	0,070	0,071	0,073	0,008	0,011

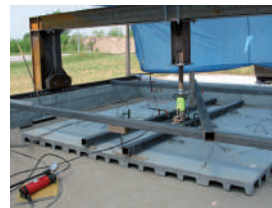
Typical Cupolex slab design

Values in the following table shows the maximum uniformly distributed loads accepted and the reinforcement as a function of the slab thickness, keeping in consideration a soil $K_w = 0.02 \text{ N/mm}^3$, 10cm of concrete underneath, and slab concrete on top of class C25/30. In case of higher loads please contact our technical office.

STRUCTURE USE	DEAD LOAD (Kg/m²)	LIVE LOAD (Kg/m²)	SLAB THICKNESS (cm)	REINFORCEMENT
Residential	200	200	4	ø 5/20x20
Offices	200	300	5	ø 5/20x20
Garages	300	700	5	ø 6/20x20
Industry	300	1200	6	ø 8/20x20
Industry	300	1600	7	ø 8/15x15

Structural resistance

Cupolex Slabs have been tested in collaboration with CNR (Italian National Research Center) and Padua University. All results are implemented in the calculation software "Easy-Cupolex" available for free. Request it to our technical office.



Walkability

Cupolex elements have been tested to resist a compression load of 150 daN applied in a 5x5 cm area on the top of the elements (italian Circolare n°617 of 02/02/2009 C 4.1.9.1.3).

Technical assistance

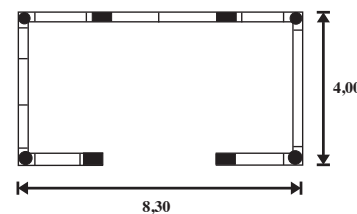
Pontarolo Engineering provides free technical assistance for cupolex slab design.

Send us the foundation plan in .dwg or .dxf format to the e-mail address: assistenza@pontarolo.com

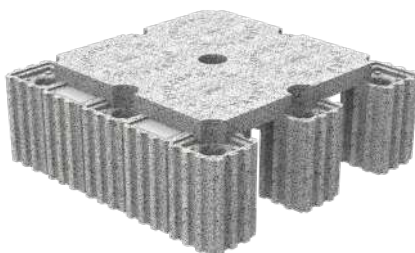
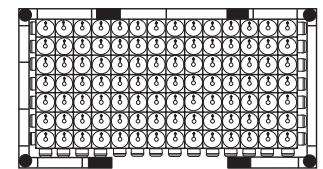
Be sure to consult the latest version of this brochure available on our website www.pontarolo.com.

You can also find other useful material such as technical data sheets, dwg, BIM objects, specifications, etc.

From your foundation design



To our Cupolex layout



Insulated and aerated floor for the maximum comfort.

ISOLCUPOLEX is a multi patented system for the creation of an aerated concrete slab with an integrated floor insulation with heights varying from 11 cm to 250 cm.

The elements in Twinpor® EPS act as a stay-in-place forming system for the casting of the pavement slab and have high insulation properties. The slab can bear high loads and leave a void underneath providing aeration and /or passage of utilities. In this way the slab has an integrated floor insulation layer on the outer side of the structure; this stratigraphy helps to avoid all humidity problems. Moreover the concrete layer can better provide a thermal flywheel for an optimal average radiant temperature all year round.