



skydome

system for two-way ribbed slabs



- INNOVATIVE
- LIGHT
- REUSABLE





SKYDOME VISION

By wisdom the house shall be built, and by prudence it shall be strengthened.

(Proverbs, Old Testament)

**A HEALTHY HOUSE IS IMPORTANT BUT IT IS NOT ENOUGH.
IT MUST ALSO BE SAFE. GEOPLAST CARES ABOUT IT.**

A safe, healthy and comfortable house, which can resist over time is not a dream... today it is possible!

Just choose the best ally: ABS. It is an extraordinary material, which lighten the structure while making it robust: these characteristics can make the difference in case of a earthquake.

Unlike other traditional construction materials, ABS does not absorb water and therefore it does not release moisture over time: with it your house will stay dry and comfortable.

Moreover, it is a plastic recycled material which respects the environment.

Geoplast S.p.A. in Green Building Council Italia,
The Network of Green Building.





SKYDOME FORMWORK IN TECHNOPOLYMER

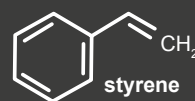
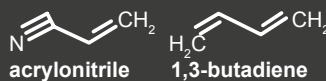
SKYDOME is a system of modular formwork in plastic used to build two-way ribbed slabs in residential and commercial buildings.

The system was designed to decrease the weight of traditional full-concrete slabs. The dome-shaped forms create a matrix of voids surrounded by orthogonal ribbing, producing a two-way configuration very suitable for large-spanning slabs.



Why ABS

(Acrylonitrile Butadiene Styrene)



High mechanical strength •

Shock resistance •

Thermal stability •
(-30°C / + 70°C)

Very high surface quality •

Recyclable material •

SKYDOME ADVANTAGES



Recoverable formwork system for the realization of
bi-directional waffle slabs with large spans

seismic resistance



SKYDOME hollowed slab reduces the mass of the structure producing considerable advantages in seismic performance

lightness



The composing elements are very light and can be easily installed and handled

reuse



ABS plastics does not stick to concrete, thus dismantling is extremely easy making the formwork very quickly available for the next cycle

large spans



SKYDOME system makes it possible to design slabs spanning up to 13 m without drop beams or other protruding elements

architecture



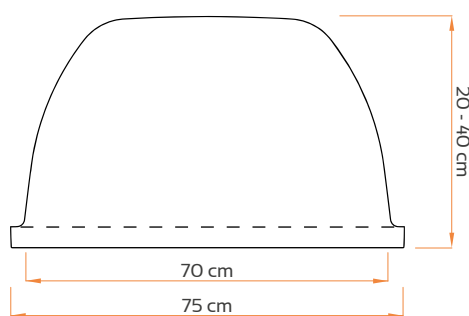
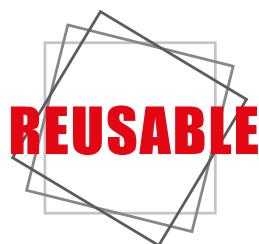
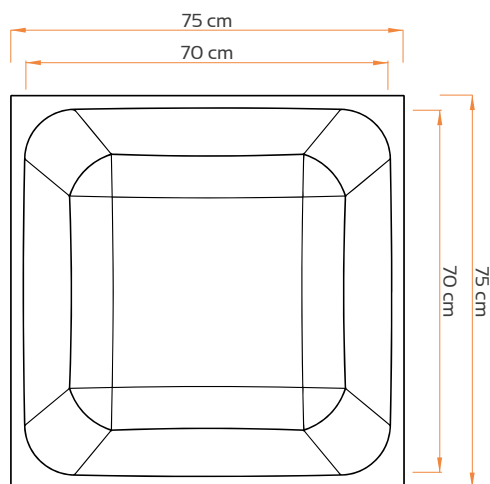
The waffle slab is pleasing to the eye and can be left exposed, creating aesthetically enjoyable environments

acoustics



The shape of the domes reduces sound waves, improving the acoustics of the structure

SKYDOME THE DOME



SIZE

Base	750 x 750 mm
Heights	200 - 250 - 300 - 350 - 400 mm

SKYDOME MATERIAL

Acrylonitrile Butadiene Styrene	ABS
Coefficient of thermal expansion	0.05 mm/m/°C

BEAM AND CUBE



THESE TWO ITEMS COMPOSE
THE SUPPORTING STRUCTURE OF THE DOME

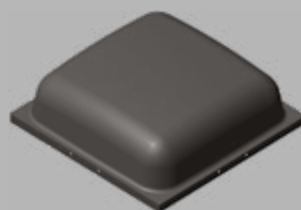
Light and easy to handle
Fits onto standard H20 timber beams
Resistant and reusable

MADE OF ABS, EASILY CLEANSSED
WITH WATER, READY FOR REUSE

Items and accessories

DIMENSIONAL TABLES

actual size (mm)
material
weight (kg)
package dim. (mm)
Nr. pieces per pallet



**SKYDOME
H200**

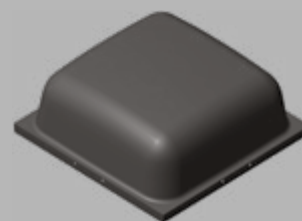
750x 750 x H200

ABS

4.83

750 x 1500 x H2310

100



**SKYDOME
H250**

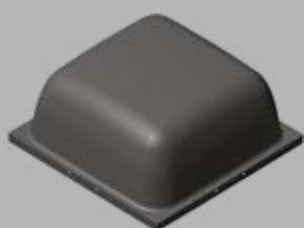
750 x 750 x H250

ABS

5.15

750 x 1500 x H2360

100



**SKYDOME
H300**

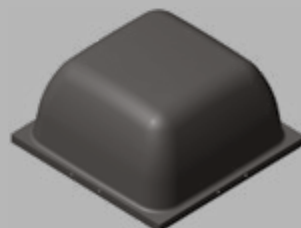
750 x 750 x H300

ABS

5.61

750 x 1500 x H2400

100



**SKYDOME
H350**

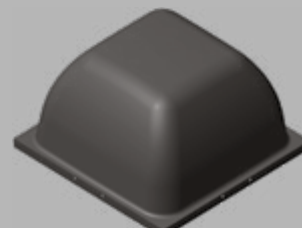
750 x 750 x H350

ABS

5.93

750 x 1500 x H2500

100



**SKYDOME
H400**

750 x 750 x H400

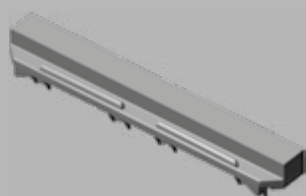
ABS

6.25

750 x 1500 x H2550

100

actual size (mm)
material
weight (kg)
package dim. (mm)
Nr. pieces per pallet



**BEAM
T120**

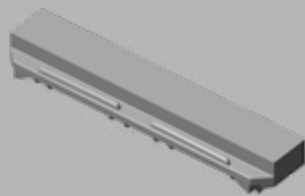
140 x 150 x H100

ABS

1.60

750 x 1200 x H2160

200



**BEAM
T160**

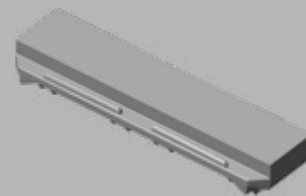
180 x 750 x H100

ABS

2.21

750 x 1200 x H2180

120



**BEAM
T200**

220 x 750 x H100

ABS

2.74

750 x 1200 x H2190

100

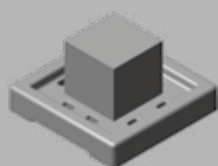
actual size (mm)

material

weight (kg)

package dim. (mm)

Nr. pieces per pallet



**CUBE
C120**

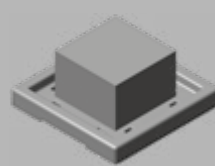
150 x 150 x H100

ABS

1.61

750 x 1200 x H2100

500



**CUBE
C160**

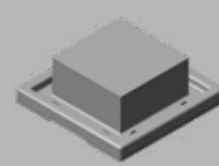
190 x 190 x H100

ABS

1.92

1000 x 1200 x H2100

500



**CUBE
C200**

230 x 230 x H100

ABS

1.92

1000 x 1200 x H2200

300

actual size (mm)

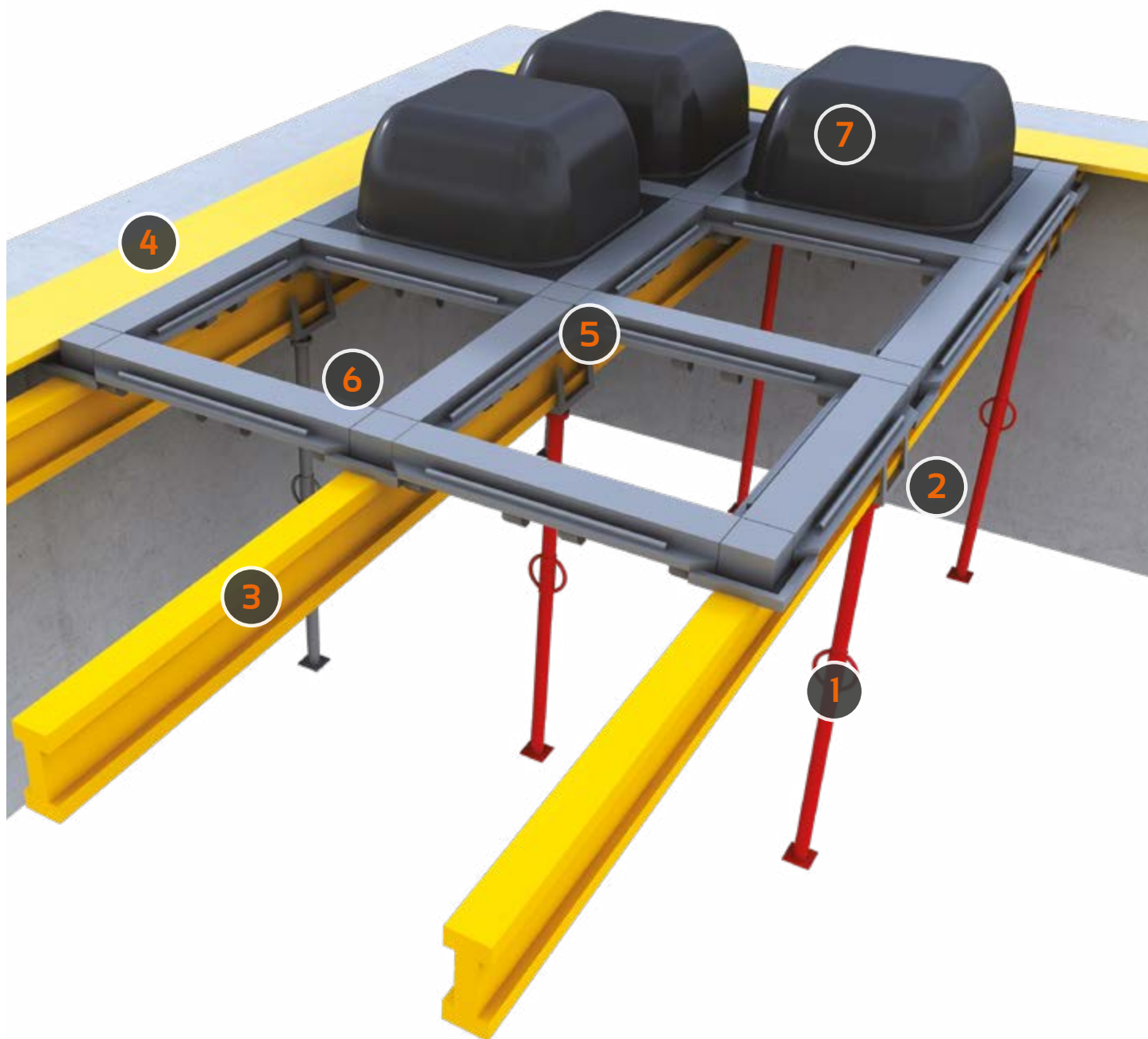
material

weight (kg)

package dim. (mm)

Nr. pieces per pallet

ITEMS AND ACCESSORIES



① STEEL PROP

③ TIMBER BEAMS

⑤ SKYDOME CUBE

⑦ SKYDOME DOME

② PROP FORK

④ TIMBER INFILL

⑥ SKYDOME BEAM

FLAT SYSTEM



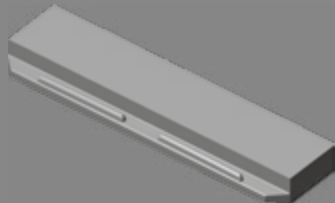
In combination with supporting decks

SKYDOME FLAT can be installed on a flat slab formwork, which becomes a supporting deck for the SKYDOME system items. SKYDOME FLAT beams and cubes were specifically engineered for this application, housing the standard SKYDOME domes. The final result - a two-way waf-

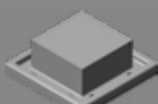
file slab - is identical to the one obtained by standard SKYDOME elements. All system items are easy to dismantle and are cleansed just with water before being ready for reuse. The excellent smooth finish can be left in sight without need for a suspended ceiling.

Walkable formwork surface
Does not suffer weathering
Light and easy to handle

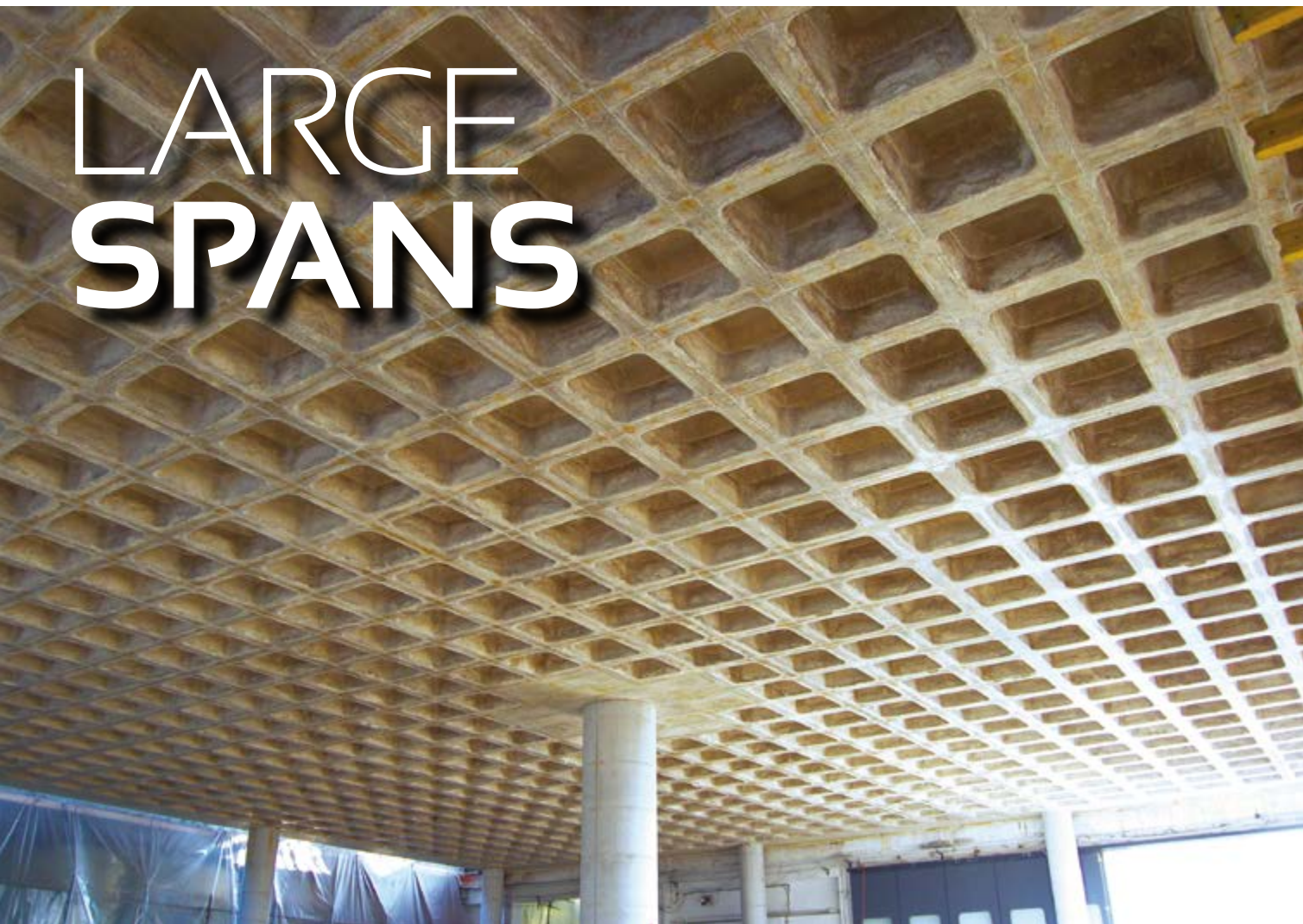
BEAM TF120 TF160 TF200



CUBE CF120 CF160 CF200



LARGE SPANS



Reusable formwork for slabs

SKYDOME system allow the realization of two-way hollowed slabs which reduce the use of concrete, thus decreasing the self weight of the structure. **SKYDOME** reusable elements are used to form decks on which the concrete can be

poured. Once the concrete has cured, **SKYDOME** will be removed, thus obtaining a smooth and pleasing ceiling often left exposed by design. This formwork system is used to realize large-spanning reinforced concrete slabs..

Safe work
Smooth results
Reusable formwork



MULTI-LAYER BUILDINGS

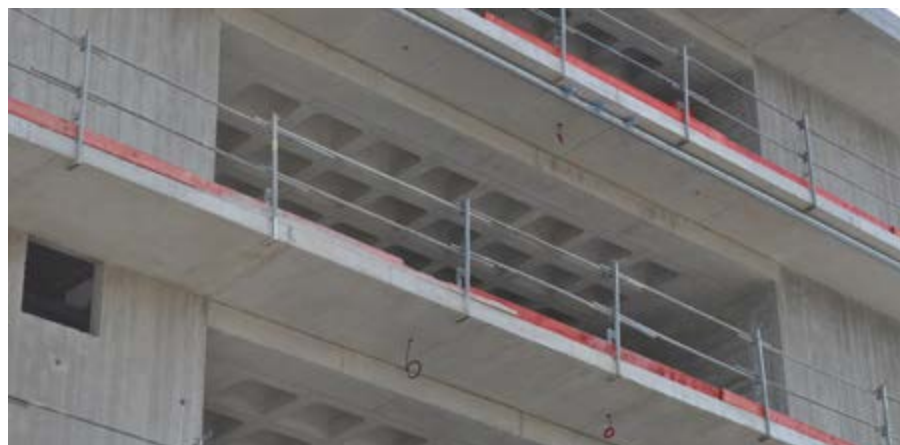


Seismic advantages

The self-weight of concrete slab formed with **SKYDOME** is up to 30% lower than a full concrete slab. This is a distinct advantage as it reduces the the oscillation of a build-

ing during an earthquake thus increasing its structural resistance. Moreover the weight reduction of the slab allows design and cost advantages for the overall concrete frame.

Reduced seismic mass
Lighter concrete frame
Light and easy to handle



MULTI-STOREY CAR PARKS



Simplified passage of underground utilities

A waffle slab formed with **SKYDOME** virtually eliminates the need for drop beams and column heads. This makes the soffit completely

flat removing all obstacles to the passage of tubes, plumbing and all systems, making their installation easier and more economical.

Beams of same depth as slab
Soffit without dropped elements
More flexibility in rc frame design





ACOUSTIC PERFORMANCE

Sound abatement

The characteristic dome shape of **SKYDOME** waffle slab provides a considerable advantage in terms of noise reduction. The shape of the cavities in the slab refracts sound waves thus producing noise absorption and an improvement of the acoustics within a

building. This is particularly important in environments such as schools or classrooms where the noise otherwise tends to reverberate reducing speech intelligibility, rendering the room less productive for learning.

Ideal for class rooms
Noise reduction
Better acoustics

- CLASS ROOMS
- MEETING HALLS
- STUDY HALLS
- LECTURE HALLS
- SCHOOL CANTEENS
- PUBLIC BUILDINGS



PRELIMINARY DESIGN

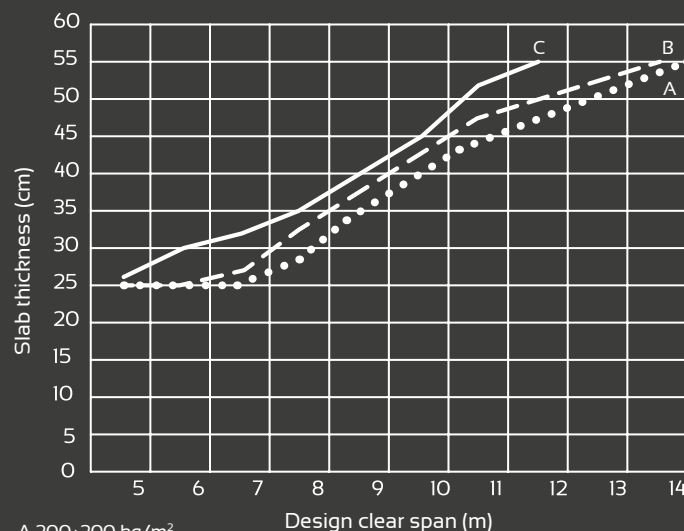
Slab depth calculation

Based on the design span and the imposed load it is possible to make a preliminary assessment of the required thickness of a SKYDOME slab, as shown in the chart to the right.

Example

For a load of $600+300 \text{ kg/m}^2$ (live + dead loads) and clear spans (distance between columns) of 8m, the slab thickness is approximately 350 mm (dome + topping slab).

In the case of particular loads or specific design constraints the Technical Department of GEOPLAST is available for custom modeling and calculation.



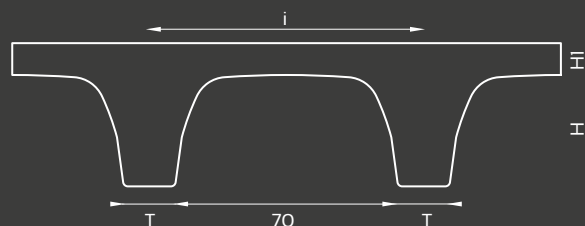
Concrete consumption

ITEM	Ribbing width (T) cm	On centres (I) cm	Concrete consumption ribbing m ³ /m ²	Concrete consumption of the slab m ³ /m ²		
				Topping slab depth HI=50 mm	Topping slab depth HI=100 mm	Topping slab depth HI=150 mm
SKYDOME H200	12	82	0.080	0.130	0.180	0.230
	16	86	0.091	0.141	0.191	0.241
	20	90	0.100	0.150	0.200	0.250
SKYDOME H250	12	82	0.099	0.149	0.199	0.249
	16	86	0.113	0.163	0.213	0.263
	20	90	0.125	0.175	0.225	0.275
SKYDOME H300	12	82	0.123	0.173	0.223	0.273
	16	86	0.139	0.189	0.239	0.289
	20	90	0.153	0.203	0.253	0.303
SKYDOME H350	12	82	0.151	0.201	0.231	0.301
	16	86	0.169	0.219	0.269	0.319
	20	90	0.185	0.235	0.285	0.335
SKYDOME H400	12	82	0.185	0.235	0.285	0.335
	16	86	0.205	0.255	0.305	0.355
	20	90	0.222	0.272	0.322	0.372

The table to the left allows to calculate the concrete consumption and consequently the self-weight of the floor according to the height of the dome and the width of the ribbing.

Example

For a slab of 300 + 50 mm (300 mm dome + 50 mm topping slab) with ribbing width of 160 mm, the concrete consumption is $0.189 \text{ m}^3/\text{m}^2$ and the self-weight is 472.50 kg/m^2 .



SKYDOME INSTALLATION



1 After the creation of the supporting system (steel props + timber beams) the beams and cubes in ABS are installed in order to build a regular grid where the domes are to be placed. As the grid is created, the domes will be installed, too.

2 Working from below, i.e. in maximum safety, the **SKYDOME** domes are installed in the previously created. serendole all'interno del reticolo precedentemente creato. Once the first elements are in place the system is walkable.

SKYDOME DISMANTLING



1 After 6-7 gg from the pour, it is possible to dismantle the **SKYDOME** system removing in sequence steel props, timber beams, **cubes in ABS** and **beams in ABS**. The dismantling is done working from below, in complete safety.



2 After having removed the first two rows of beams and cubes in ABS, remove also the **SKYDOME** domes. After the dismantling, it is necessary to post-prop the slab until full curing of the concrete.

Geoplast Technical Assistance

The Geoplast Technical Department ensures the necessary support at every stage of the construction. After analyzing the specifications and design constraints of the project, our technical staff will design the most suitable formwork layout, also including any accessory items. If necessary, on-site assistance can be agreed upon to follow installation, pour and dismantling operations.



GEOPLAST S.p.A.

35010 Grantorto PD - Italia - Via Martiri della Libertà, 6/8
tel +39 049 9490289 - fax +39 049 9494028

e-mail: geoplast@geoplast.it - www.geoplast.it

