



Foam glass is a light material closed in porous structure and it has very good physiochemical properties. It is made in a tunnel furnace, by using in a given time on the powdered glass a temperature of +900°C and then by intensive cooling it cracks making aggregate with aggregation of 40 to 65 mm.

HOGER® – MODERN ISOLATION OF THE FOUNDATION

Most important properties Of the foam glass

HOGER® foam glass is characterised by following properties:

- high thermal isolation – thermal conductivity factor $\lambda = 0,08 \text{ W/(mK)}$
- non-flammable – reaction to fire in class A1
- low saturation
- waterproof
- odourless
- conveys loads over density
- is not subject to degradation and does not get aged with time
- does not require additional ballast
- shortens the time of building the foundation slab
- does not convey thermal bridges
- resistant to aggressive environment, acids and bases
- oil-proof
- resistant to moulds, insects and rodents
- non changeable shapes of the crystals
- resistant to compression
- acoustic insulation.

This material serves several functions, i.e. it can be used for thermal isolation of a drain, hydro-isolation, noise barrier, filler of light concrete. It is worth mentioning that foam glass is a material which is easy to work on.

Aforementioned qualities are proven by

▼ Table 1.

Fundamental values	Value	Unit	Norm
Grains shape	Irregular	–	EN 13055-1
Grains dimension	0-63	[mm]	
Bulk density	146	[kg/m ³]	EN 1097-6:2000
Percentage of crushed grains	NPD	–	–
Presence of pollution	NPD	–	–
Resistance to crushing	0,60-1,84	[MPa]	EN 13055-1
Preence of chlorides	< 0,01	[% Cl]	EN 1744-1:1998
Presence of sulphides dissolved in the acid	0,08	[% SO ₃]	EN 1744-1:1998
Total sulfur	0,02	[% S]	EN 1744-1:1998
Stability of volume	NPD	[% mass loss]	–
Saturation	12,2	[% dry mass]	EN 1097-6:2000
	2,6	[Vol %]	
Radiation	NPD	–	–
Heavy metals released	NPD	–	–
Released poliaromatic hydrocarbons	NPD	–	–
Released other dangerous substances	NPD	–	–
Hardness and freezing-defrosting	1,2	[%]	EN 13055-1
Durability and alkaline-diatomaceous reactivity	NPD	–	–
Thermal conductivity	0,08	[W/(mK)]	PN ISO 8301:1998

the research in certified PCA laboratory in accordance with PN-EN norms 13055:2016-07 (light aggregates – Part 1: light aggregates for concrete, mortar and

light mortar) and PN-EN 13055:2016-07 (Light aggregates for asphalt mixes not-hydraulic and hydraulic and surface consolidation).

▼ Table 2.

Fundamental values	Value	Unit	Norm
Grains shape	Irregular	–	EN 13055-2
Grains dimension	0-63	[mm]	
Bulk density in loose state	146	[kg/m ³]	
Resistance to fragmenting crushing	0,60-1,84	[MPa]	
Stability of volume	NPD	–	
Saturation	12,2	[% dry mass]	
	2,6	[Vol %]	
Capillary action	NPD	–	
Composition/contents	NPD	–	
Releasing heavy metals by elution	NPD	–	
Presence of pollution	NPD	–	
Releasing other dangerous materials	NPD	–	
Persistence and freezing-defrosting	1,2	[%]	
Percentage of crushed grains/grains with crushed surface	NPD	[% masy]	
Thermal conductivity	0,08	[W/(mK)]	PN ISO 8301:1998

concentrating the first layer and then repeating both activities for the second layer. Completing the work in two stages will cause the whole substructure of foam glass to be concentrated equally on the whole height. Concentrated foam glass is to be covered with isolating foil which will be a protective barrier preventing cement slurry from getting into the glass. On the foil one can put the formwork, reinforcement and installations which will be flooded in the slab. Comparing to the traditional methods there is no need of using ballast made of sand, aggregates or light concrete.

Usage of HOGER® foam glass

The results presented in tables 1 and 2 allowed for using the foam glass to produce the prefabricated energy saving houses in a factory in Radzionków. Foam glass aggregate may also be used as substructure and isolation of the foundation slab in housing business, public utilities, warehousing and production facilities and wherever the floors need to be of top quality.

Foam glass used for isolation and substructuring of foundation slab decreases significantly the costs and the time of building of the slab. During its preparation it is essential to prepare the ground in accordance to the bearing capacity guidelines in advance. ■

Preparation of the foundation slab

In the beginning of the construction process it is essential to prepare a pit, remove hummus and level the ground. Next, one needs to put geotextiles on with some spare, so that the side layer of the glass can be covered by it (if it is needed, one can conduct dehydration). Into the

pit one needs to put the foam glass layer with a height of 40 to 50 cm, which is then to be concentrated with plate compactor to the height of 30 to 40 cm. This will give us an isolating support layer. For larger surfaces it is possible to use building roller (it is essential to remember to concentrate equally the whole surface). In case of using thicker layers – over 50 cm, the work needs to be conducted in two stages, i.e. spreading and



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HOGER®
SOLIDNY PARTNER NA BUDOWIE

Produkt

**HOGER – house ready to move in**

Manufacturer: HOGER Sp. z o.o.

The company produces prefabricated houses using the foam glass. The buildings have monolithic reinforced foundations, prefabricated three-layered load-bearing walls made of: mineral layer which accumulates the heat, light concrete based on the foam glass (making the base and thermal and acoustic isolation) and additional Styrofoam layer with silicone exterior paint. Ceiling plate is made of reinforced light concrete based on the foam glass. The buildings are very warm and dry and also resistant to fungi, moulds, rodents. HOGER house is being constructed in one day. All elements: foundations, walls, floor and roof are brought to the construction site and installed on the spot. Thanks to the modern technology of connecting the elements and well organised team, the company may prepare the house for moving in in two weeks – including all the installations, finishing, painting the walls, preparing bathroom, all in accordance with the customer's wishes. All HOGER houses are connected by one feature – they are single storey. The company bases its constructions on several main projects and the customer chooses one that is most suitable.