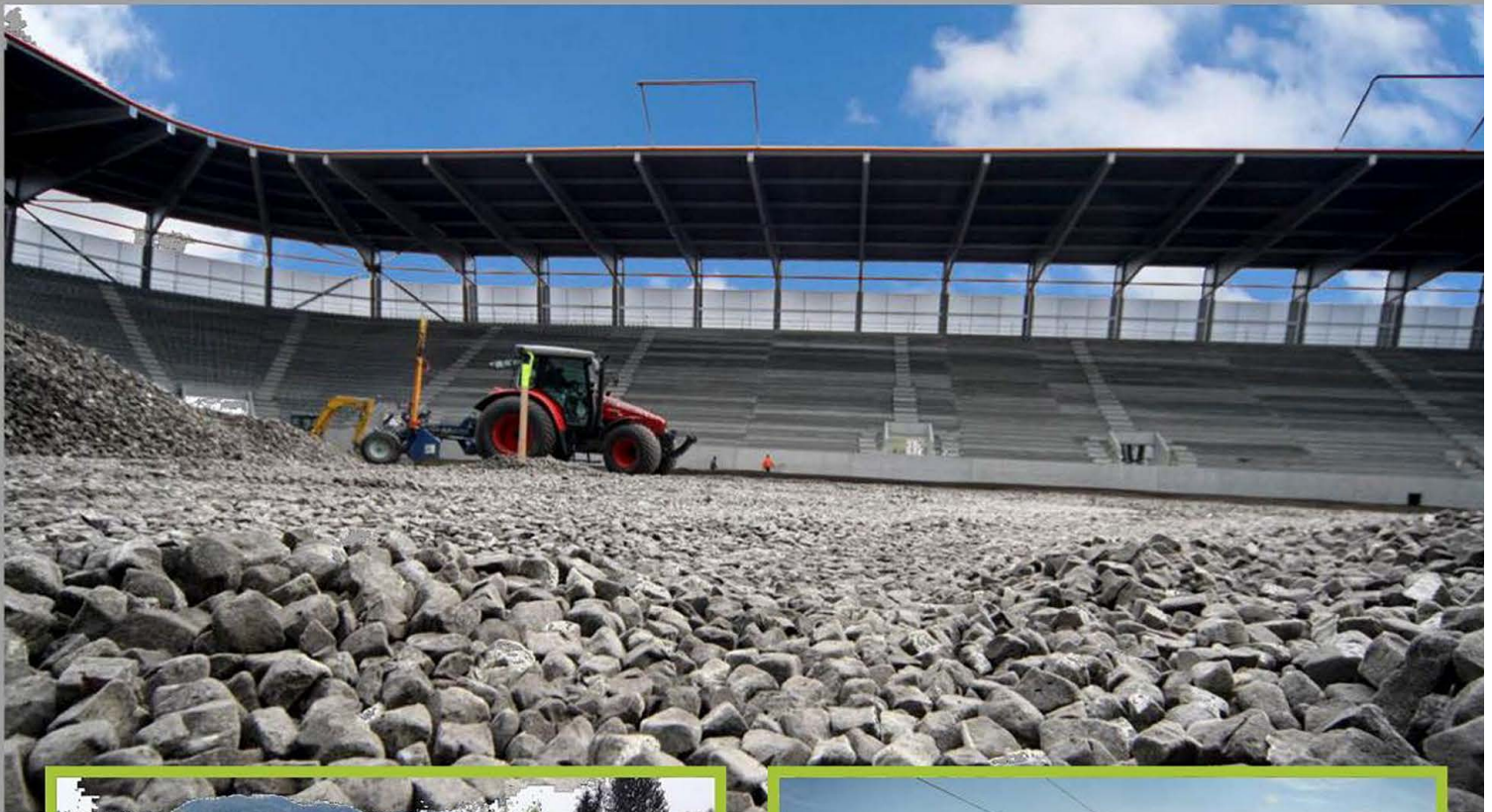


HIGH PERFORMANCE IN EVERY ASPECT



THE ECOLOGICAL ALTERNATIVE FOR ALL FOUNDATIONS



Deutsches
Institut
für
Bautechnik



GEOCELL® FOAM GLASS GRAVEL

GEOCELL
SCHAUMGLAS

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GEOCELL® FOAM GLASS GRAVEL

GEOCELL
SCHAUMGLAS

WHAT IS GEOCELL?



Manufactured from 100% recycled WASTE GLASS

GEOCELL foam glass gravel is now **LABC registered**, this certification now boasts GEOCELL as the only foam glass available in the UK with **LABC approval!**



Ecofriendly insulation for floor construction and foundations.
Independently approved thermal and load bearing properties.



Cost saving compared to conventional floor construction.

Manufactured from 100% recycled waste glass.

Low embodied carbon - Sustainable - Lightweight - Easy to handle.

Reduced construction time and costs.



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GEOCELL® FOAM GLASS GRAVEL

ADVANTAGES OF GEOCELL

INSULATING

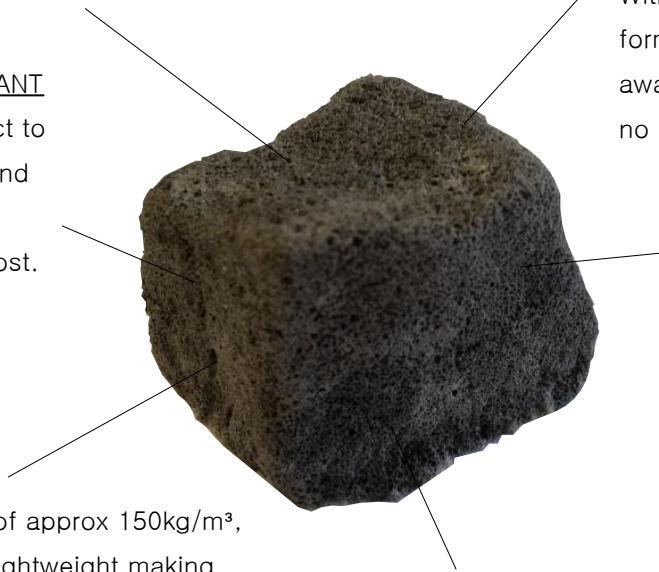
GEOCELL foam glass gravel consists of millions of closed cells, the air locked inside these cells are responsible for GEOCELL's outstanding insulating properties – 0.080 W/mK.

FREEZE-THAW RESISTANT

GEOCELL does not react to the freeze-thaw cycle and thus effectively protects against the impact of frost. No additional frost protection is required.

LIGHTWEIGHT

With a dry bulk density of approx 150kg/m³, GEOCELL is extremely lightweight making installation quick and easy.



ANTI-CAPILLARY

With its closed cell structure, GEOCELL forms a capillary break keeping moisture away from the building fabric resulting in no mould growth and structural damage.

DRAINAGE

With GEOCELL, rain water is immediately drained away from the building whilst offering the additional advantage of insulating the outside of existing walls.

LOAD-BEARING

Due to its glass cell structure, GEOCELL provides excellent compressive strength – 275 KN/m² (27.5 tonne/m²) at compaction factor 1.3 : 1.

SAVING WITH GEOCELL

- Less excavation.
- All-in-one foundation in a single step.
- Compensating and adaptable, no cutting required.
- Easy insulation of pipes.
- Considerable saving in terms of construction time due to fast installation.

GEOCELL® FOAM GLASS GRAVEL

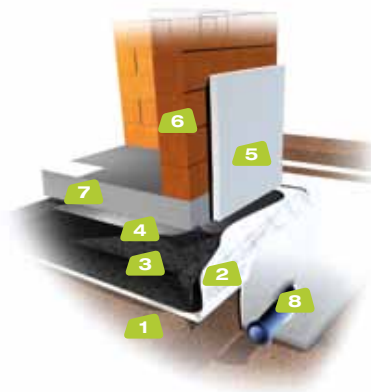
APPLICATIONS - BUILDING INSULATION

BUILDING INSULATION BELOW FLOOR SLAB

The benefit of a GEOCELL® insulation under the floor slab is a structure without thermal bridges. Since it is an exterior insulation, heat cannot dissipate. Thus, there is no water condensation and as a consequence, no mould formation appears.

ADVANTAGES

- ▲ Suitable for **THERMAL INSULATION** under the foundation slab of single/multi family houses, production halls, schools, swimming pools and ice rinks, etc.
- ▲ **HIGHER COMPRESSIVE STRENGTH** than other competing materials. Simpler and more cost-effective installation technology
- ▲ Single steps such as grading excavation, gravel installation and laying insulation boards can be eliminated.
- ▲ **NO FROST BARRIER REQUIRED**



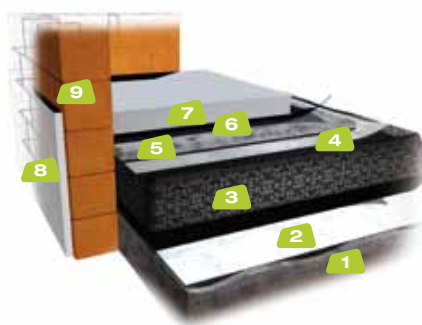
- 1 planum/formation level
- 2 geotextile
- 3 GEOCELL®
- 4 PE-foil
- 5 wall insulation
- 6 exterior wall
- 7 concrete floor slab
- 8 drainage pipe

BUILDING INSULATION EXISTING FLOOR RENOVATION

The selection of appropriate insulation material is especially crucial in old buildings. GEOCELL® combines drainage layer and insulation in a single product, thus reducing building height. Moreover, GEOCELL® is diffusible, an important property for an insulating material when humidity is an issue.

ADVANTAGES

- ▲ **LIGHT-WEIGHT** GEOCELL® is a fraction of the weight of gravel. This makes it easy to transport and work with
- ▲ **STRONG** excellent compressive strength
- ▲ **WATERPROOF** thanks to the closed cell structure, GEOCELL® is completely unaffected by water
- ▲ **ENVIRONMENTALLY GREEN** GEOCELL® is made from waste glass and can be reused or recycled at any time



- 1 planum/formation level
- 2 geotextile
- 3 GEOCELL®
- 4 PE-foil
- 5 subbase*
- 6 sealing*
- 7 screed
- 8 wall insulation
- 9 exterior wall

*if required

GEOCELL® FOAM GLASS GRAVEL

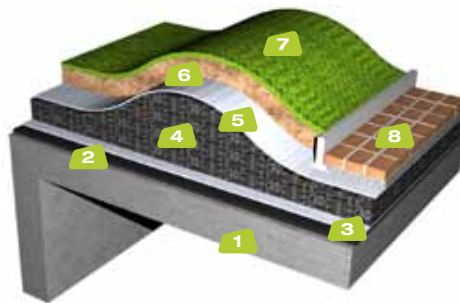
APPLICATIONS - LANDSCAPING

LANDSCAPING LIGHT WEIGHT MATERIAL FOR GREEN ROOFS

GEOCELL® is easy to handle and can be driven over and walked on during construction. It is resistant to rotting, maintains its form and thanks to its high insulating properties, prevents frost damage. Ideal for landscaping and gardens. With a density of less than 150 kg/m³ and a 45 degree repose angle, GEOCELL® can be used effectively on roof construction - from flat roofs to underground parking garages and tunnels.

ADVANTAGES

- ▲ **LIGHT WEIGHT MATERIAL:** saves structural design
- ▲ **NON COMBUSTIBLE:** Classified as an A1 building material
- ▲ **MOULDABLE;** a 45 degrees repose angle allows creative roof design
- ▲ **INSULATES AND DRAINS** prevents frost damage



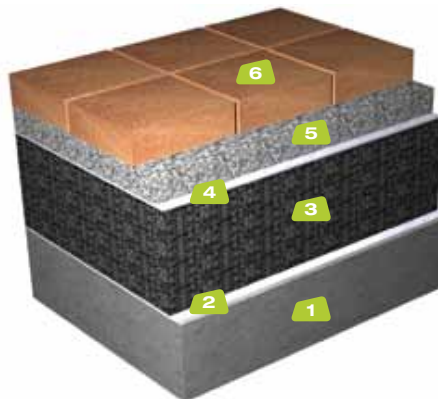
- 1 concrete roof/tunnel/car park
- 2 sealing
- 3 geotextile
- 4 GEOCELL®
- 5 geotextile
- 6 substratum
- 7 vegetation
- 8 pavement

LANDSCAPING LOAD-BEARING CONSTRUCTION

GEOCELL® not only reduces the applied load, but is also load bearing. Pavement for paths and roads can be laid directly in a leveling layer on the compacted GEOCELL. Even blacktopping directly on GEOCELL® is possible. Due to the lightness of the material, there are hardly any restrictions for the creative landscape architect.

ADVANTAGES

- ▲ **LIGHT-WEIGHT** GEOCELL® is a fraction of the weight of gravel. This makes it easy to transport and work with
- ▲ **STRONG** excellent compressive strength
- ▲ **NON COMBUSTIBLE:** Classified as an A1 building material

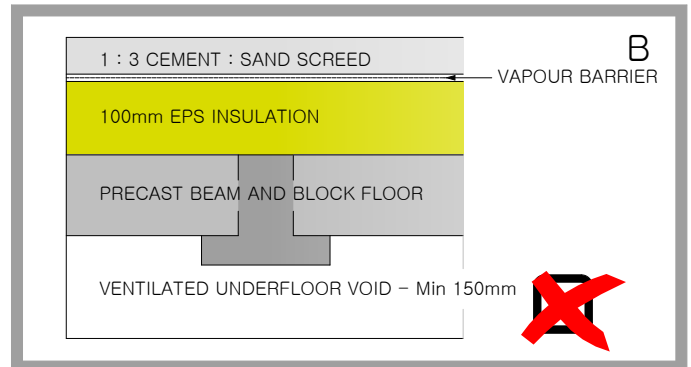
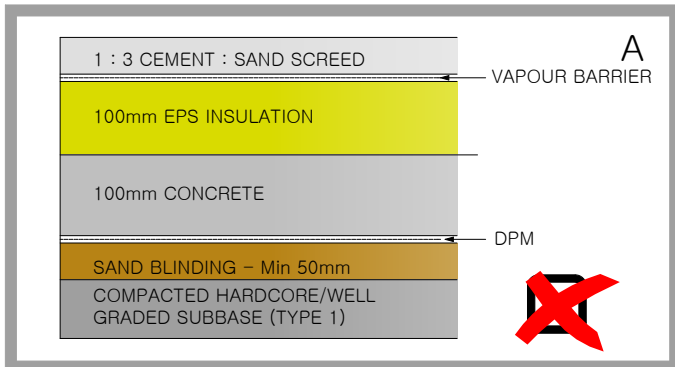


- 1 building / basement ceiling
- 2 geotextile / sealing as required
- 3 GEOCELL®
- 4 geotextile
- 5 load balancing layer
- 6 upper surface: concrete blocks (drain pavement), natural stone or wood covering

GEOCELL® FOAM GLASS GRAVEL

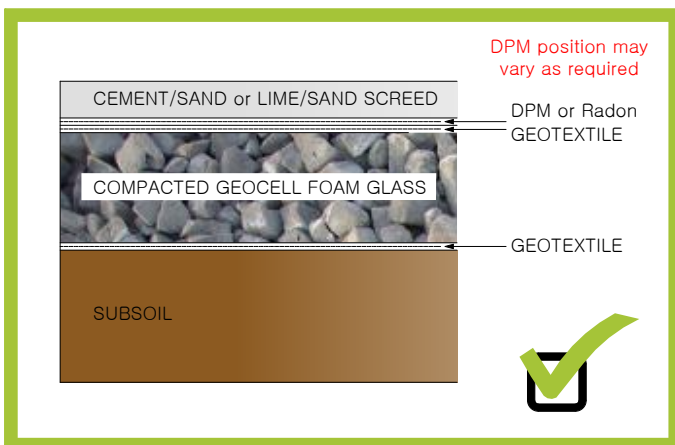
CONSTRUCTION DETAILS

DOMESTIC BUILDING – GROUND FLOOR CONSTRUCTION Conventional Construction (Typical Details)

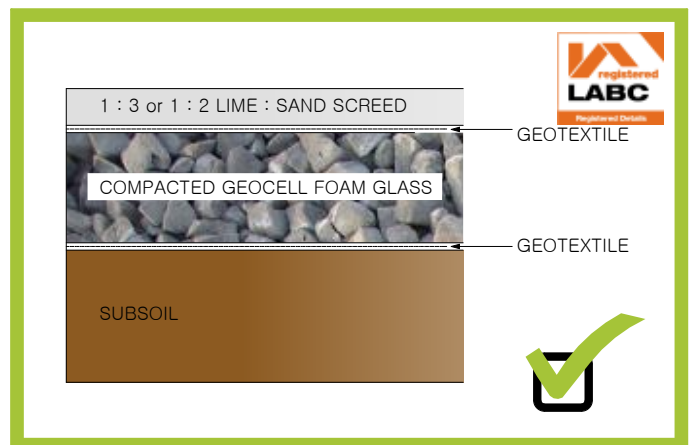


THE ECOLOGICAL ALTERNATIVE INCORPORATING GEOCELL

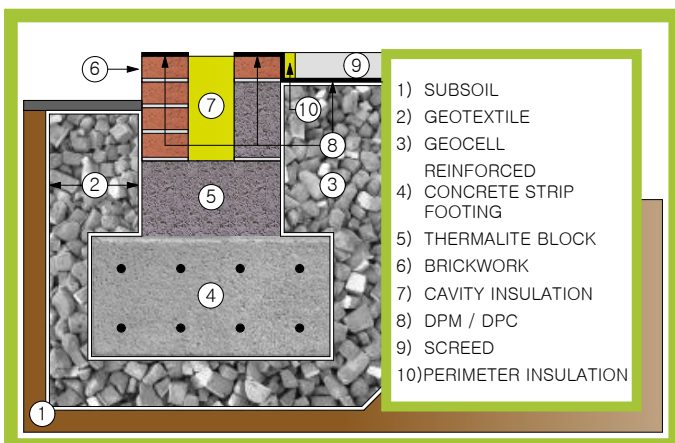
GROUND FLOOR – NEW BUILD (Or renovation if DPC or Radon barrier is required)



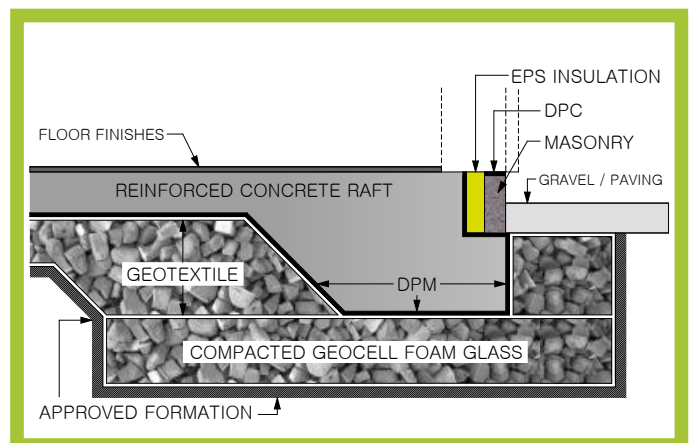
GROUND FLOOR – RENOVATION (Breathable GlassCrete system)



INSULATED FOUNDATION DETAIL (Domestic)



INSULATED FOUNDATION DETAIL (Commercial)



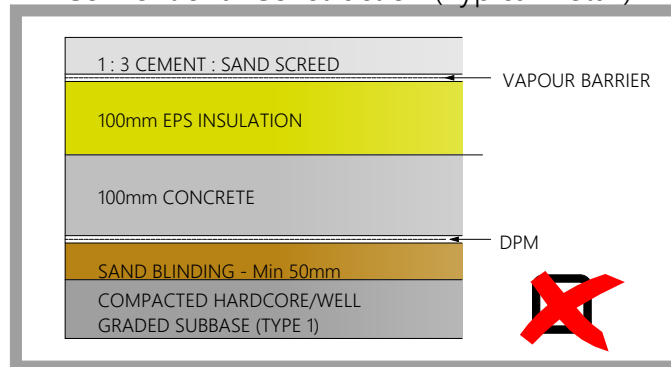
GEOCELL® FOAM GLASS GRAVEL



COST COMPARISON - CONVENTIONAL CONSTRUCTION

DOMESTIC BUILDING - GROUND FLOOR CONSTRUCTION

Conventional Construction (Typical Detail)



SUPPLY AND INSTALLATION OF GROUND FLOORING

CONVENTIONAL CONSTRUCTION
Based on prices May 2016

Item No.	Description	Quantity	Unit	Rate	Amount £
	Costings based upon replacing an existing floor of typical area of	50	m ²		
1	Supply and install compacted well graded granular sub-base as Type 1 150mm thk	0.15	7.5 m ³	165.00	1237.50
2	Supply and install sand blinding 50mm thk	0.05	2.5 m ³	155.00	387.50
3	Supply and install 1200 gauge dpm	50	m ²	2.15	107.50
4	Supply and install 100mm thk oversite concrete grade GEN 1 or ST2 consistency class S2	0.10	5 m ³	180.00	900.00
5	Supply and install 100mm EPS/PUR insulation Lambda 0,023 W/mK	50	m ²	22.25	1112.50
6	Supply and install vapour barrier	50	m ²	1.60	80.00
7	Supply and install premixed 1:4 cement: sand screed with micro fibre reinforcement 65mm thk.	50	m ²	19.10	955.00
8	Clean up on completion including the provision of a skip for the disposal of off cuts of EPS insulation		Item		200.00
	ANTICIPATED TIME FOR UNDERTAKING THESE WORKS	4	days		
					4980.00

FIGURES ARE FOR COMPARISON ONLY - CONTRACTOR COSTS MAY DIFFER

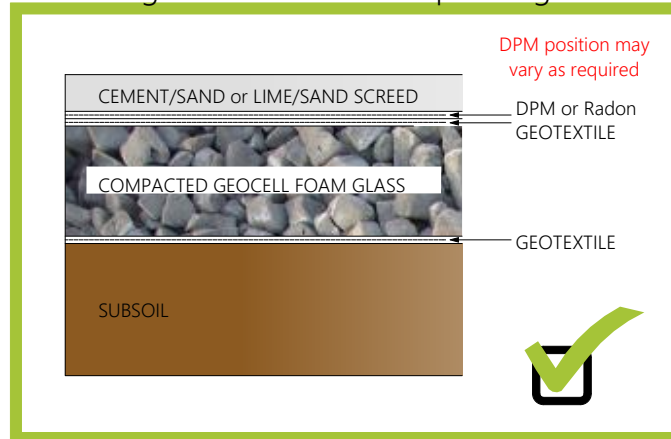
THE ECOLOGICAL ALTERNATIVE FOR ALL FOUNDATIONS

GEOCELL® FOAM GLASS GRAVEL



COST COMPARISON - ECOLOGICAL ALTERNATIVE

DOMESTIC BUILDING - GROUND FLOOR CONSTRUCTION The Ecological Alternative Incorporating GEOCELL



SUPPLY AND INSTALLATION OF GROUND FLOORING

ECOLOGICAL ALTERNATIVE WITH GEOCELL FOAM GLASS GRAVEL

Based on prices May 2016

Item No.	Description	Quantity	Unit	Rate	Amount £
	Costings based upon replacing an existing floor of typical area of	50	m ²		
1	Supply and install GEOCELL foam glass gravel including all compaction, Lambda 0,08 W/mK 350mm thk	0.35	22.75 m ³	120.00	2730.00
2	Supply and install geotextile	100	m ²	1.56	156.00
3	Supply and install 1200 gauge dpm	50	m ²	2.15	107.50
4	Supply and install premixed 1:4 cement: sand screed with micro fibre reinforcement 65mm thk.	50	m ³	19.10	955.00
5	Clean up on completion			incl.	
	ANTICIPATED TIME FOR UNDERTAKING THESE WORKS	2	days		
					3948.50

FIGURES ARE FOR COMPARISON ONLY - CONTRACTOR COSTS MAY DIFFER

THE ECOLOGICAL ALTERNATIVE FOR ALL FOUNDATIONS

GEOCELL® FOAM GLASS GRAVEL

GEOCELL
SCHAUMGLAS

DESIGN DATA

GEOCELL is an aerated foam glass gravel manufactured from 100% recycled waste glass.

GEOCELL is light weight material having a loose bulk density of approx 150kg/m³.

Uses of GEOCELL include:

- Load bearing thermal insulation beneath floor slabs providing a complete replacement for conventional hardcore, blinding, oversite concrete and expanded polystyrene construction or precast beam and block and polystyrene insulation flooring.
- Load bearing thermal insulation beneath foundations.
- Light weight fill for landscaping including french drains.

GEOCELL is chemically inert and complies with requirements for environmental compatibility.

GEOCELL does not present any hazard to the health and safety of persons involved with its installation or use.

GEOCELL offers: frost resistance, prevents condensation in the building component, self-draining, diffusible, no gas emission and odor free, anti-capillary against rising water, incombustible class A1, anti-aging, rodent, bacteria, and rot resistance, long-term stability, no damage to concrete.

Design characteristics of GEOCELL:

Nominal value for
compressive strength
f_{c,nom}

570 kPa

>570 (kN/m²)

Nominal value for
compressive stress
f_{cd} = f_{c,mom}/Y_M . α

275 kPa

275 (kN/m²)

For full details see GEOCELL Technical Data Sheet

THE ECOLOGICAL ALTERNATIVE FOR ALL FOUNDATIONS

GEOCELL® FOAM GLASS GRAVEL



DESIGN DATA

Design thickness of GEOCELL :

- Minimum compacted thickness of GEOCELL 10/30 is 100mm.
- Minimum compacted thickness of GEOCELL 10/60 is 150mm.
- Maximum compacted single layer thickness 300mm.
- For design thickness greater than 300mm, placing and compaction is to be undertaken in two or three layers.
- Maximum compacted thickness beneath floor slabs and foundations is 900mm.
- Compaction ratio i.e. loose material to compacted state is 1.3 : 1.

U – Values achieved using GEOCELL in situ :

(Example based on design area of 50m² with 25m exposed perimeter and clay subsoil)

U – Values (W/m ² K)	Loose thickness (mm)	Compacted thickness (mm)
0.36	130	100
0.29	195	150
0.24	260	200
0.21	325	250
0.19	390	300
0.14	585	450
0.09	975	750

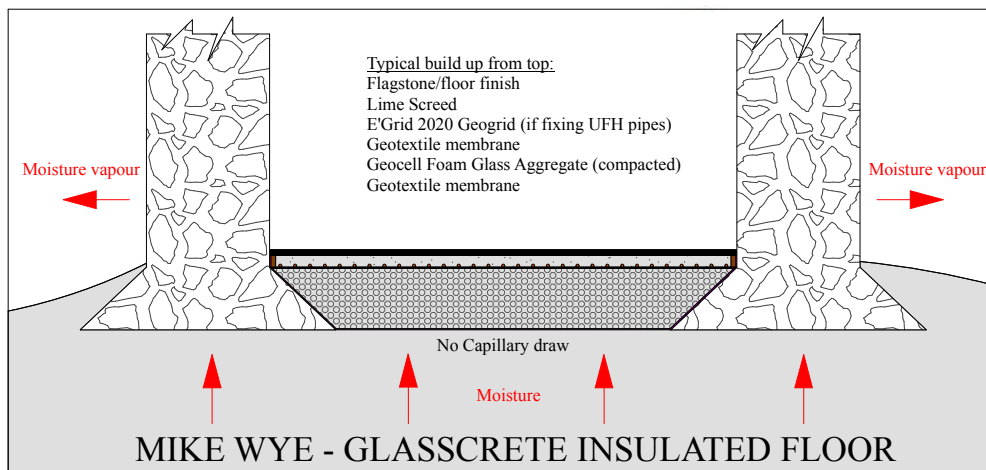
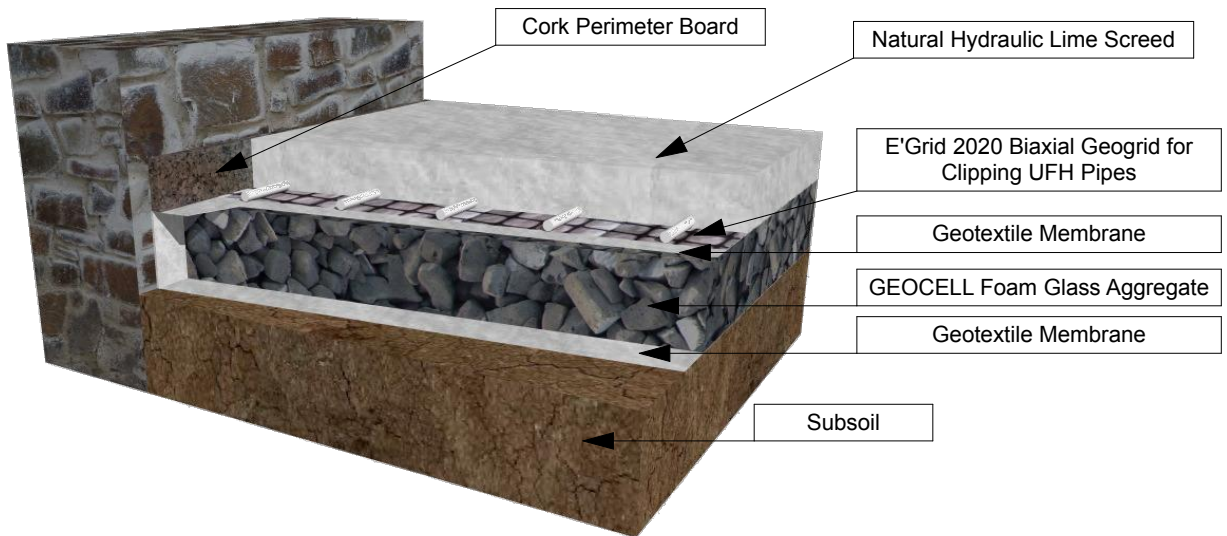
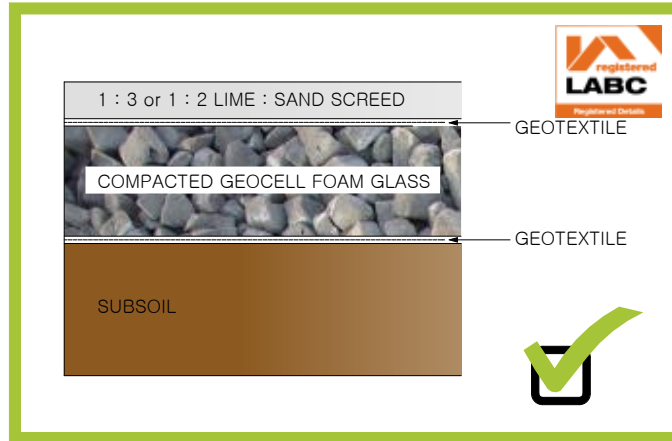
U – Values of GEOCELL as stand alone material :

U – Values (W/m ² K)	Loose thickness (mm)	Compacted thickness (mm)
0.80	130	100
0.53	195	150
0.40	260	200
0.32	325	250
0.27	390	300
0.18	585	450
0.11	975	750

GEOCELL® FOAM GLASS GRAVEL

GLASSCRETE - BREATHABLE FLOOR SYSTEM

GROUND FLOOR – RENOVATION
Breathable GlassCrete system – LABC Registered



GEOCELL® FOAM GLASS GRAVEL

PROJECT REFERENCES

Basement insulation, under slab as well as backfill, rooftop insulation and road construction: GEOCELL is an all-rounder with many benefits, cutting construction time and costs

THE FUNDAMENTAL ALTERNATIVE FOR MANY APPLICATIONS:



(Foto: Pauli Architekten)

1



(Foto: Robert Schnitzler Bau)

2



(Foto: Pauli Architekten)

3



(Foto: Vorr & Wiegner/Projektgestaltung)

4



(Foto: Spitz/Commerz)

5



6



7



8



(Foto: BSE/WWL/Architekten)

9

- 1 Passive house, Bruck/Waasen, Austria
- 2 Renovation of a historic basement and arch, Stadtkeller Pregarten, Austria
- 3 Passive house, Auleiten, Austria
- 4 Kindergarden (Passive house standard) Siloah, Hannover, Germany
- 5 Low-energy supermarket Vienna, Austria
- 6 Glachau Castle Renovation, Germany
- 7 AFG Fußball-Arena, St.Gallen, Switzerland
- 8 Passive house kindergarden, Robert Koch Strasse, Wels, Austria
- 9 Highschool, Lappersdorf, Germany

GEOCELL® FOAM GLASS GRAVEL**DELIVERY OPTIONS****FORMS OF DELIVERY FOR GEOCELL FOAM GLASS GRAVEL**

BULK LOOSE MATERIAL – Max 90m³

Walking floor truck – 18m x 2.5m x 4m



Pre-packed Bigbags – Max 66m³

Walking floor truck – 18m x 2.5m x 4m



Pre-packed Bigbags – 16m³ per load

Crane off load – Local delivery only



Pre-packed Bigbags – Qty as required

Pallet distribution network

**Bigbags Sizes**

BigBag 1 m³ ~ 150 kg

BigBag 2 m³ ~ 300 kg

BigBag 3 m³ ~ 450 kg



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GEOCELL
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GEOCELL® FOAM GLASS GRAVEL

RIBA PRODUCT SELECTOR / NBS PLUS

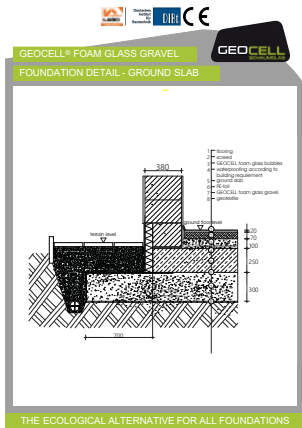
GEOCELL meets RIBA Product Selector & NBS Plus

It's now even easier to specify GEOCELL Foam Glass Aggregate by searching for applications and specifications on RIBA Product Selector and the National Building Specification (NBS Plus)

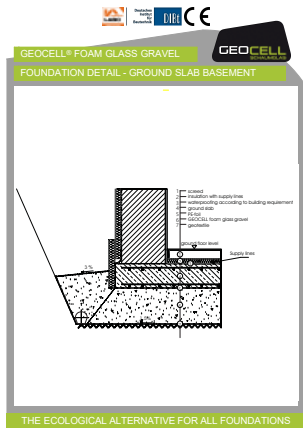
The sustainable choice of aggregate is increasingly being used in the UK for renovations, construction, landscaping and civil engineering applications due to its load-bearing, lightweight and insulating properties.



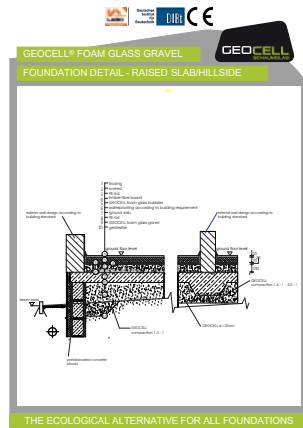
<http://www.ribaproductselector.com/geocell-foam-glass/28051/overview.aspx>



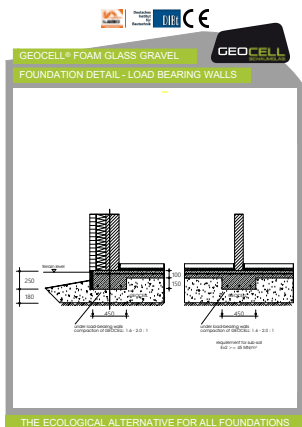
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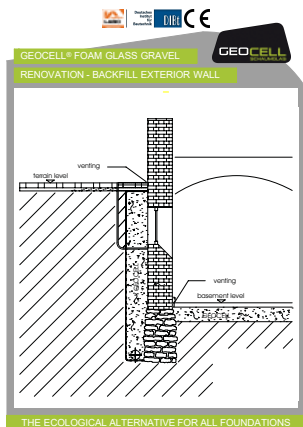
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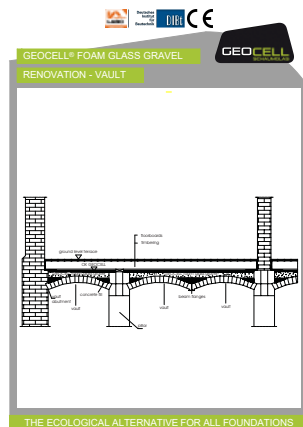
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