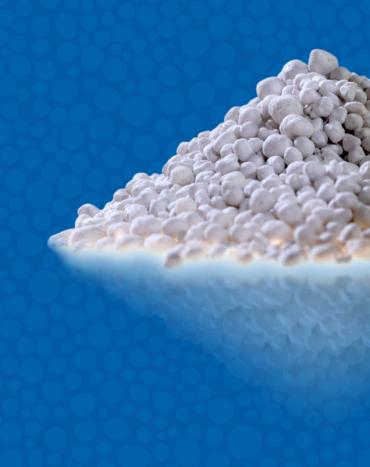
GEOMATERIALSExpanded Glass

MORE REASONS TO FEEL GOOD.

LIGHTWEIGHT INSULATING AND LEVELING FILL LOOSE OR BOUND.





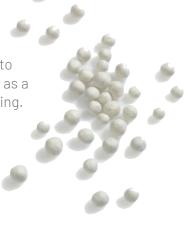
Made from recycled glass and 100% mineral.

LIGHT. WARM. STABLE.

GEOMATERIALS Expanded Glass is formed of lightweight beads to banish cold, damp, and noise. This is a building material that is light as a feather, moisture-resistant, dimensionally stable, and resistant to aging. Moreover, it is ideal as a loose or bound thermally insulating fill.

As a lightweight insulating and leveling fill, this building material meets the highest quality requirements and can be used in a wide variety of applications – be it for joist ceilings, cavities and gaps, or floors.

GEOMATERIALS Expanded Glass is THE environmentally friendly, mineral alternative to conventional cement-bound EPS fill under the screed.



AN ALL-ROUNDER WITH MANY ADVANTAGES

High thermal insulation

Air is a great insulator. The vast number of closed cavities therefore provide great thermal insulation – even when bound in small structural thicknesses.

Easy to work with

Simply pour and distribute. No compression required.

Resilient and dimensionally stable

No shrinkage, swelling, or long-term settlement: Dimensionally stable up to 750°C.

Lightweight and pressure-resistant

Owing to its cell geometry, it is highly pressure-resistant and light as a feather.

Sound-absorbing

Ideal as a leveling fill in intermediate ceilings. Increases the acoustic effectiveness of building materials.

Moisture-resistant

Dries out quickly and does not provide a breeding ground for mold.

Resistant

To bacteria, frost, aging, rotting, moisture, acid, insects and rodents.

Harmless

Being made from recycled glass, it is non-toxic, fiber-free, solvent-free, odorless, anti-allergenic and radiologically safe.

- Non-combustible class A1, and does not produce harmful gases in a fire.
- Can be walked on shortly after installation
- Sustainable

Made from recycled material, so no raw materials consumed



Production of GEOMATERIALS Foam Glass USED GLASS AS A RAW MATERIAL



The raw material for **GEOMATERIALS Expanded Glass** is recycled glass. This valuable secondary raw material is recycled via collection schemes.

GEOMATERIALS Expanded Glass is made from selected glass fractions that are not used in the production of bottles and glasses.

GEOMATERIALS Expanded Glass therefore closes a gap in the recycling cycle and helps to conserve natural resources.

PRODUCTION:

First, recycled glass is finely ground, mixed, and shaped. The "green powder" is then sintered and foamed (expanded) in the rotary kiln. This process produces light, round granules with a closed fine pore structure. After cooling, the cream-white granules are divided into individual grain fractions by sieving.

Loose insulating fill

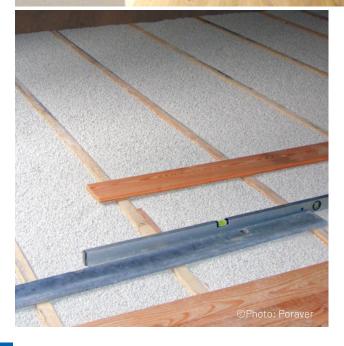
with **GEOMATERIALS Expanded Glass** with/without screed









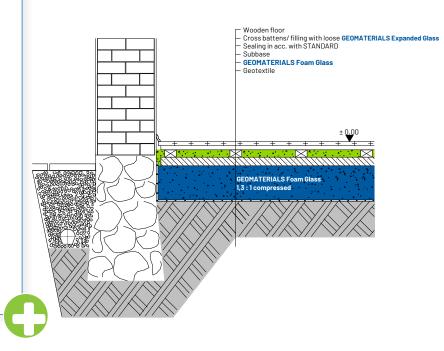


gap as a loose fill between joist ceilings and in cavities. Easy to work with, it insulates perfectly and creates a pleasant, pollutant-free indoor climate. In new builds and renovations, **GEOMATERIALS Expanded Glass** makes it easy to cover pipes and cable ducts and insulates against noise. In the renovation of listed buildings, it boasts vertical interior insulation. Facing formwork can be backfilled without any problems, as the small balls fill every cavity. In new builds, it is used as thermal separation between floor slabs and intermediate ceilings.

GEOMATERIALSExpanded Glass

ADVANTAGES

- Lightweight: GEOMATERIALS
 Expanded Glass is light as a feather, which helps to save on the dimensioning of the substructure
- Resilient and durably stable: GEOMATERIALS Expanded Glass stays in shape – no readjustments required!
- Moisture-resistant: Made from 100% recycled glass,
 GEOMATERIALS Expanded Glass absorbs almost no water and dries quickly
- Non-combustible class A1

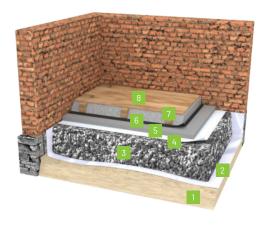


Floor construction with screed



- 1 Top covering (carpet, parquet, etc.)
- 2 Laid dry screed elements
- Impact sound insulation board
- 4 GEOMATERIALS Expanded Glass loose
- If necessary, trickle protection (film, glass fleece, etc.)
- 6 Wooden ceiling
- 7 Ceiling suspension

Floor structure without screed



- Subgrade/old stock
- 2 Geotextile as required
- GEOMATERIALS Foam Glass
- 4 PF film
- 5 Subbase* / **GEOMATERIALS Expanded Glass**
- Sealing in accordance with DIN/Austrian standards*
- 7 Flooring joists poss. backfill **GEOMATERIALS Expanded Glass**
- 8 Floor

^{*}may be omitted

Bound leveling fill

with **GEOMATERIALS Expanded Glass**





The bound **GEOMATERIALS Expanded Glass Fill** can be used wherever light, thermally insulating floor leveling is required. The mineral-bound, pressure-resistant fill is used to level floors as a leveling fill over cables and pipelines. The healthy-living material guarantees first-class insulation with maximum fire safety and fast construction progress. Due to the low moisture content, it can be walked on after just one day without any problems.

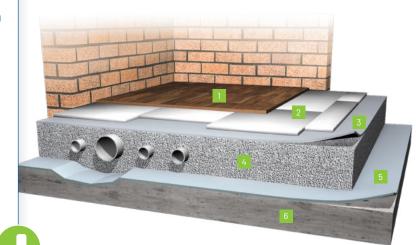
Static considerations play a crucial role when using **GEOMATERIALS Expanded Glass** for balconies and terraces. Balconies and roof terraces can only take a limited load.

Because **GEOMATERIALS Expanded Glass** is a significantly lighter material than other drainage materials, such as gravel fill, the weight can be significantly reduced when insulating roof structures.

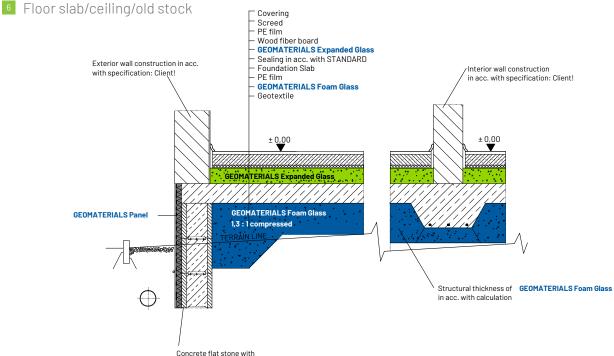
GEOMATERIALSExpanded Glass

ADVANTAGES

- Lightweight: In minerally bound form, GEOMATERIALS Expanded Glass is light as a feather, which helps to save on the dimensioning of the substructure
- Highly thermally insulating: Even when bound, GEOMATERIALS Expanded
 Glass insulates in small structural thicknesses
- Resilient and durably stable:
 GEOMATERIALS Expanded Glass stays in shape – no readjustments required!
- Moisture-resistant: GEOMATERIALS
 Expanded Glass absorbs almost no water and dries out quickly
- Non-combustible class A1



- Top covering (e.g. parquet)
- 2 Dry screed elements
- Impact sound insulation board
- GEOMATERIALS Expanded Glass 2-4 mm, minerally/cement bound
- 5 Separation layer (PE film)

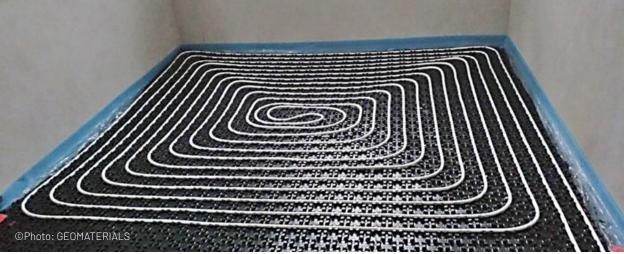


reinforcement in acc. with static specification!

Floor renovation

Combination of **GEOMATERIALS Foam Glass** & **GEOMATERIALS Expanded Glass**



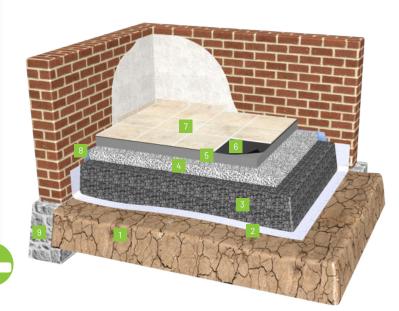


The bound **GEOMATERIALS Expanded Glass Fill** can be used wherever light, thermally insulating floor leveling is required. The mineral-bound, pressure-resistant fill is used to level floors and as a leveling fill over cables and pipelines. The healthy-living material guarantees first-class insulation with maximum fire safety and fast construction progress. Due to the low moisture content, it can be walked on after just one day without any problems.

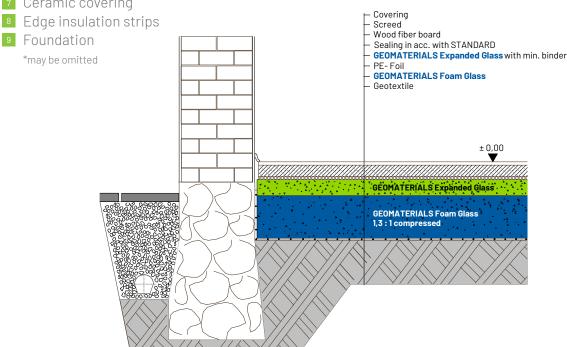
In combination with **GEOMATERIALS Foam Glass**, which is used for rough leveling, this is a simple dry, moisture-resistant, non-combustible solution for re-flooring.

ADVANTAGES

- Suitable for renovating old buildings
- Optimal floor construction in combination with a screed layer
- Significantly lower structural thickness
- Can be walked on in 24 h
- Ecologically harmless, making it ideal for living spaces
- Lightweight: In minerally bound form, **GEOMATERIALS Expanded Glass** is light as a feather, which helps to save on the dimensioning of the substructure

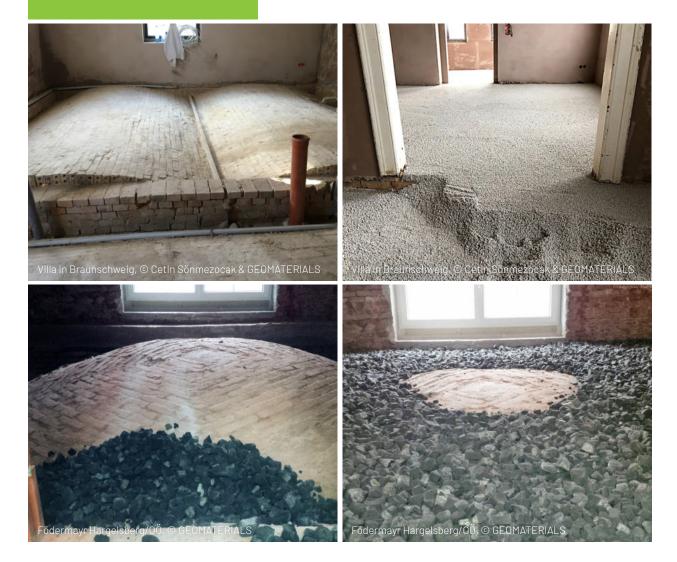


- Subgrade/old stock
- 2 Geotextile
- **GEOMATERIALS Foam Glass**, poss. fleece or PE film
- 4 Subbase*/ **GEOMATERIALS Expanded Glass** minerally/cement bound
- 5 Screed or dry screed elements
- 6 Sealing in accordance with DIN/Austrian standards*
- 7 Ceramic covering



Vault insulation

with **GEOMATERIALS Expanded Glass** and/or Foam Glass

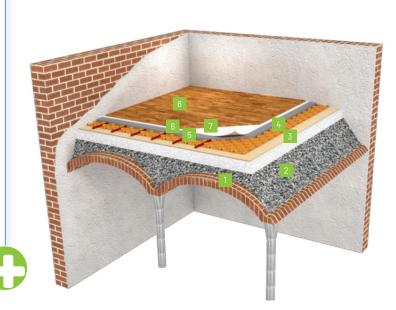


Lightweight and moisture-resistant: GEOMATERIALS Expanded Glass takes the load off old vaults

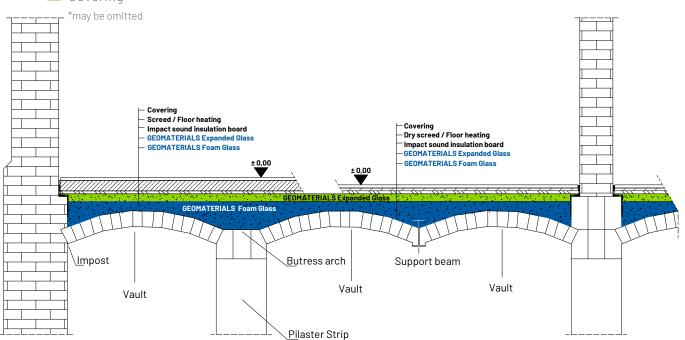
Low weight load and a slender floor structure are the main features when over-insulating old vaults. Bringing in as little additional moisture as possible is also desirable. **GEOMATERIALS Expanded Glass** is extremely light and enables quick, dry working. In combination with a finished system for underfloor heating, **GEOMATERIALS Expanded Glass** enables an extremely low floor structure with the highest ecological living quality.

ADVANTAGES

- Suitable for insulating over old buildings
- Lightweight: In minerally bound form, GEOMATERIALS Expanded Glass is light as a feather and puts barely any load on old constructions
- Extremely low floor structure with the highest ecological quality of living
- Moisture-resistant: GEOMATERIALS Expanded Glass absorbs almost no water and dries out quickly

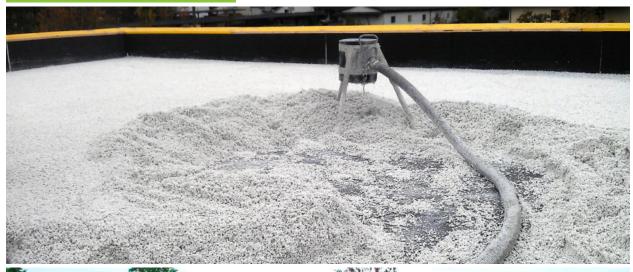


- 1 Vault
- 2 **GEOMATERIALS Foam Glass** manually compressed
- **GEOMATERIALS Expanded Glass** minerally/cement bound PE film*
- 4 Impact sound insulation
- Floor heating (e.g. Schlüter)
- 6 Screed
- Laying fleece (impact sound underlay)
- 8 Covering



Gradient insulation

with **GEOMATERIALS Expanded Glass**







No issues integrating roof penetrations

Below the waterproof seal, **GEOMATERIALS**

Expanded Glass takes on two functions at once. As a light, non-combustible insulating fill, the material helps to improve the heat transfer value and takes the load off the ceiling construction. When sloped, **GEOMATERIALS Expanded Glass** forms the correct gradient without the need for cutting.

Penetrations such as drains can be integrated to save time.

The environmentally friendly, heavy-duty leveling fill does not combust, is moisture-resistant and stays in shape.

ADVANTAGES

- Non-combustible class A1
- Saves time: GEOMATERIALS
 Expanded Glass is leveled over a gradient. No cutting, optimal integration of penetrations and drains
- Lightweight: Even in minerally bound form, GEOMATERIALS Expanded Glass is light as a feather
- Resilient and durably stable: GEOMATERIALS Expanded Glass stays in shape – no readjustments required!
- Moisture-resistant: Made from 100% recycled glass, GEOMATERIALS Expanded Glass absorbs almost no water and dries out quickly





- 2 Primer
- Vapor barrier
- GEOMATERIALS Expanded Glass Gradient insulation (minerally bound)
- Insulating panels (e.g. GEOMATERIALS Panel)
- 6 Drainage
- 7 Sealing sheet
- 8 Split leveling
- 9 Paving



Special notes for flat roofs

After hardening, the surface must be protected against precipitation with a hot bitumen sealing layer, or with a sealing layer (flamed on) or plastic sheet (glued on).

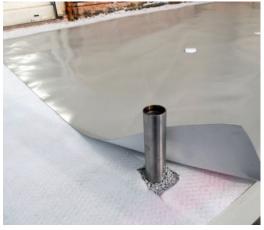
When temporarily covering with a film or tarpaulin, the material should have adequate air flow to prevent condensation.

Thermal renovation of balconies

with **GEOMATERIALS Expanded Glass**







Optimal integration of drains and pipe penetrations without the need for cutting

The bound **GEOMATERIALS Expanded Glass Fill** is easy to work with and level over a gradient. Integrating pipe penetrations, drains, and recesses is no trouble. Saves a great deal of time compared to cutting and laying insulation panels.

The eco-friendly, highly resilient **GEOMATERIALS Expanded Glass** insulating fill does not combust, is moisture-resistant and dries quickly. Subsequent layers can be added after a very short waiting period.

ADVANTAGES

- Fast working: Saves a great deal of time compared to cutting and laying insulation panels
- Non-combustible class A1: All the raw materials are of mineral origin, meaning no toxic gases or smoke are produced in the event of a building fire
- Leveling over a gradient
- Can be walked on shortly after installation
- Moisture-resistant: Made from 100% recycled glass, GEOMATERIALS
 Expanded Glass absorbs almost no water and dries out quickly
- Resilient and durably stable:
 GEOMATERIALS Expanded Glass stays in shape – no readjustments required!





- 1 Brickwork
- Concrete floor (balcony)
- 3 Sealing
- 4 **GEOMATERIALS Expanded Glass** (minerally bound) leveled over a gradient
- 5 Fleece
- 6 Sealing
- 7 Ceramic covering
- Pipe penetration (railing bracket)
- Insulation board (XPS)
- 10 Facing





Subsequent core insulation

from double-wall masonry with **GEOMATERIALS Expanded Glass**

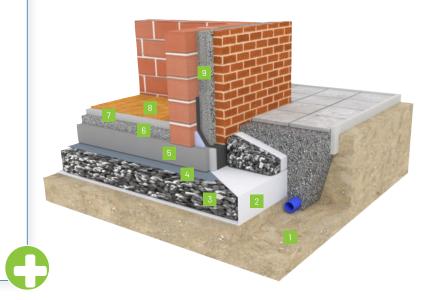


Double-wall masonry usually consists of a non-load-bearing front wall shell, which protects against the weather and provides the facade design, and a load-bearing back wall shell, which provides load transfer and heat storage. Full insulation between the two masonry walls is referred to as core insulation, and means that the entire cavity between the two walls is filled with **GEOMATERIALS Expanded Glass**. Despite a comparatively thick wall cross-section, the construction without insulation gives rise to unpleasant surface temperatures on the inside of the wall.

In the base area in particular, the use of moisture-resistant insulating materials that are not sensitive to settlement is essential. The energy efficiency of many existing buildings can be drastically improved with relatively little effort by injecting **GEOMATERIALS Expanded Glass**.

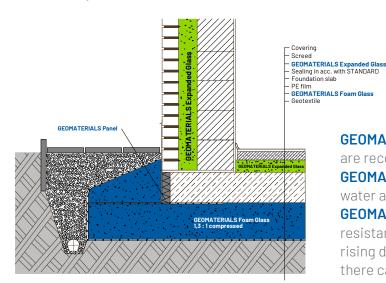
ADVANTAGES

- Easy to work with: GEOMATERIALS
 Expanded Glass is injected loose
- Moisture-resistant and breathable Made from 100% recycled glass,
 GEOMATERIALS Expanded Glass absorbs almost no water and dries out quickly
- Eco-friendly and energy-efficient
- Dimensionally stable: No long-term settlement
- Non-combustible class A1
- Resistant to aging, rotting, and rodents



- Subgrade/old stock
- Geotextile as required
- **GEOMATERIALS Foam Glass**
- 4 Fleece or PE film
- Floor slab, sealing in accordance with DIN/Austrian standards*
- Leveling fill with GEOMATERIALS Expanded Glass (bound), PF film
- 7 Screed or dry screed elements
- 8 Flooring
- GEOMATERIALS Expanded Glass (loose)

*may be omitted



GEOMATERIALS Expanded Glass granules of 2-4 mm are recommended for the base area.

GEOMATERIALS Expanded Glass protects against water accumulation in the air layer in the base area. **GEOMATERIALS Expanded Glass** is moistureresistant and anti-capillary, so it protects against rising damp. The upper insulation remains dry, so there can be no damage due to damp.

Thermal lining – Brick backfill

Filling of hollow brick with **GEOMATERIALS Expanded Glass**





Filling is effortless using a granulate slide that is pushed over the bricks.





The ceiling mortar can be applied as usual after the bricks have been swept clear.

Filling consumption for one row of bricks	ng consumption for one row of bricks		
Ederplan XP 50 TRIONIC	approx. 52.50 l/rm	Height 20 cm	
Ederplan XP 50 plus	approx. 62.50 l/rm	Height 25 cm	
Ederplan XP 38 System 20	approx. 37.50 l/rm	Height 20 cm	
Ederplan XP 38	approx. 45.00 l/rm	Height 25 cm	
Poroplan 38 VZ	approx. 50.00 l/rm	Height 25 cm	
Ederplan 25 System 20	approx. 22.40 l/rm	Height 20 cm	
Vertically perforated brick plan 25/38 VZ	approx. 27.60 l/rm	Height 25 cm	

Thermal separation between floor slab/intermediate ceiling and outer wall:

The base detail (first row of bricks on the floor slab or basement ceiling), in addition to other connection details, has increasingly become the focus in energy-efficient buildings. A simple and effective method for thermal separation between the floor slab and outer wall, and between the intermediate ceiling and outer wall, is to fill and insulate the first row of bricks on site with **GEOMATERIALS Expanded Glass** (2-4 mm). This solution significantly reduces the vertical thermal conductivity of the vertically perforated bricks.

Working: To avoid thermal bridges, depending on the situation and general conditions, individual rows of bricks can be filled with **GEOMATERIALS Expanded Glass**. It reduces the flow of heat in all directions, thereby helping to construct connections that are free of thermal bridges.

Different grain sizes



GEOMATERIALS Expanded Glass

2-4 mm

Packed in sacks or big bags
Preferred area of application: Loose fill, bound
leveling fill, filling of cavities and bricks

GEOMATERIALS Mineral binding agent

Binding agent for expanded glass granulate 14.5 kg sack 1 pallet = 78 sacks = 1,131 kg

(Dimensions: 1.20 x 0.80 x 1.60 m)



GEOMATERIALS Expanded Glass

4-8 mm *

3-8 mm *

Packed in sacks or big bags Preferred area of application: Bound leveling fill

* on request

Correct binding



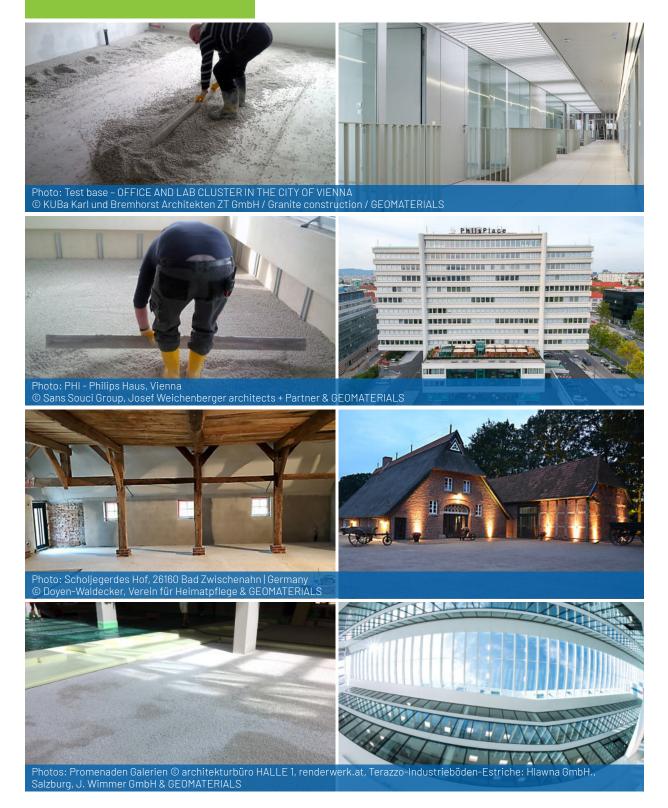
How **GEOMATERIALS** Expanded Glass

should look in bound form.

- Cement-bound
- Resin-bound
- Minerally bound

High-load leveling fill

with **GEOMATERIALS Expanded Glass**



Correct mix: GEOMATERIALS Expanded Glass

The specified mixture is suitable for the screed substructure. For an even greater compressive strength or an improved grain bond, the proportion of binder and water should be increased. In any case, a test field is required and an on-site suitability test must be carried out.

Example recipe for high thermal insulation with GEOMAT	recipe for high thermal insulation with GEOMATERIALS binding agent (mineral)		
Mix volume	1 m³		
GEOMATERIALS Expanded Glass	approx. 1,000 l		
GEOMATERIALS Mineral Binding Agent	approx. 5 sacks of 14.5 kg		

Water (mix earth-moist, test field absolutely necessary!!!)



Water as needed (may vary depending on mixer capacity)



GEOMATERIALS Expanded Glass



GEOMATERIALS Mineral Binding Agent



NOTE: The mixing time of at least 2 minutes is imperative for an optimal mixing result!



Watch video

Prepare the substrate and installation area.

Clean and pre-treat the substrate (possibly primer improver for flat roofs); if necessary, attach edge insulation strips.

It's so easy!

GEOMATERIALS Expanded Glass Installation step by step



Recommended equipment for installing GEOMATERIALS Expanded Glass

The equipment suggested below is merely a selection of many possible devices. A hand mixer and a mixing tub are ideal for very small areas.

SCREED PUMPS



All commercially available screed pumps can be used for working

Photo: © Thermowhite

ARGE-SCALE INSTALLATION





Mobile mixing plant

Installation using a screed pump

The finished mixture is pumped into the building with a conveying hose. The maximum distance from the installation site depends on the pump's output. Once mixed, **GEOMATERIALS Expanded Glass** can be processed carefully for up to 30 minutes. Then smooth and level the surface with a clean batten, applying light pressure. When applying several layers, always work "fresh on fresh".



Conveying and application with the screed pump





Leveling off

Technical Data

Screeds mixed with water require drying times of up to 8 weeks, depending on the humidity or the heating temperature. Before the screed can be covered with flooring – "readiness for covering" – the residual moisture must be checked. This is done by means of the calcium carbide method (CM). The values are determined using a CM measuring device.

CM measurement to determine the moisture content of screed







Photos: Promenaden Galerien © architekturbüro HALLE 1, renderwerk.at, Terazzo-Industrieböden-Estriche: Hlawna GmbH., Salzburg, J. Wimmer GmbH & GEOMATERIALS

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Optimal performance down to the last detail - GEOMATERIALS Expanded Glass

APPROVALS/CERTIFICATES	
Building material approval - loose fill	DIBt Z-23.11-114
Laboratory test bvfs - minerally bound fill	A.No.: B5/504/16-1
CE certificate	EN 13055-1
THERMOCONDUCTIVITY	
Declared thermoconductivity λ (loose fill)	0.065[W/m.K]
Declared thermoconductivity λ (bound)	0.070 - 0.09 [W/m.K] depending on formulation
WORKING/COMPRESSIVE STRENGTH	
Mixing time	At least 2 minutes (in acc. with DIN/Austrian standards)
Working time	approx. 30 minutes
Working temperature, min./max.	+5°/+35°C
Walkable after	approx. 24 h (depending on temperature and humidity)
Workability at layer thickness < 200 mm	CM 12% (approx. 4-5 days). Normative requirements for the residual moisture content for the further floor structure must be observed
Compressive strength after 24 h	0.7 N/mm ²
Traffic load	700 kN/m ²
GENERAL DATA	
Delivery	Sacks in different sizes, big bags, bulk delivery
Grain size	2/4 mm, other grain sizes on request
Loose bulk density	approx. 170—190 kg/m³
Bound fresh mortar bulk density	290 kg/m ³
Minimum installation thickness	> 30 mm
Moisture content of expanded glass on delivery	≤ 0.5 M%
Water absorption for short-term immersion	$< 2 \text{ kg/m}^3$
Building material class	A1 in accordance with DIN 4102, purely mineral
Diffusion properties	Breathable
Fire resistance and gassing with heat	Non-combustible class A1, no gas emission
Material radiation	No radiation or odors
Alkali resistance	Long-term resistance, no damage to concrete
Environmental impact Resistance to environmental influences	Considered to be uncontaminated excavated material, leaching test passed Resistant to aging, rodents, bacteria and rot

The technical guidelines for the use and installation of GEOMATERIALS Foam Glass and Expanded Glass are based on previous experience and the current state of the art. They are not project-specific.

We therefore assume no liability for the sufficiency and suitability for a particular project.

In all other respects, our liability and responsibility are governed solely by our general terms and conditions of business and are not extended by any statement in this folder or by the advice given by our technical sales representatives.

Outstanding Properties

GEOMATERIALS Expanded Glass is a high-quality product made from recycled glass and is 100% mineral. With its many positive properties, it meets the highest quality standards. No other product has that in this variety.

GEOMATERIALS Expanded Glass - Always in the best shape. Whether loose or bound, **GEOMATERIALS Expanded Glass** remains dimensionally stable and guarantees optimal insulation performance with both fire and moisture resistance.



GOOD THERMAL INSULATION AND SOUND ABSORPTION

- ⇒ Air is a great insulator. **GEOMATERIALS Expanded Glass** has a number of closed cavities, making for excellent thermal insulation properties.
- **□ GEOMATERIALS Expanded Glass** absorbs sound, thereby increasing the acoustic effectiveness of building materials.



HARMLESS

- ⇒ **GEOMATERIALS Expanded Glass** is pure glass, making it non-toxic, fiber-free, solvent-free, odorless, anti-allergenic, and radiologically safe.
- **⇒ GEOMATERIALS Expanded Glass** is recyclable like glass.
- **⇒ GEOMATERIALS Expanded Glass** does not provide a breeding ground for rodents, insects or mold.



HIGHLY RESISTANT

- ⇒ **GEOMATERIALS Expanded Glass** is resistant to frost, heat, rotting, aging, bacteria, damp, acids, and organic solvents
- **⇒ GEOMATERIALS Expanded Glass** is non-combustible and does not produce harmful gases in a fire.

You may also be interested in our other **GEOMATERIALS** products: Also available online at: **www.geomaterials.eu**

HIGH-QUALITY PRODUCTS MADE FROM RECYCLED GLASS.

- Highly thermally insulating
- Load-bearing
- Time- and cost-saving
- Durably stable
- Anti-capillary
- Eco-friendly and sustainable



GEOMATERIALS Foam Glass – The optimal load-bearing insulation under the floor slab.

Highly thermally insulating and ecological



GEOMATERIALS Expanded Glass - The mineral alternative to conventional EPS fill under screed!

Environmentally friendly and non-settling



GEOMATERIALS Panel - The foam glass panel that is used wherever cold and damp need to be banished.

⇒ Ecological and watertight



