GLAVEL

FOAM GLASS GRAVEL

Commercial Construction

-Technical Guide-

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About Glavel

Glavel is a Vermont-based foam glass gravel manufacturer. Foam glass gravel is a lightweight, insulating aggregate that replaces foam board insulation and other lightweight fills in the built environment.

Foam glass gravel enables architects, builders, and engineers to meet carbon reduction goals on projects by providing a low embodied carbon, red list free alternative to carbon-intensive materials traditionally used for sub-slab insulation and lightweight fill.

Glavel's manufacturing facility in Essex, Vermont transforms 7,500 tons of post-consumer recycled glass into foam glass gravel annually using North America's first electrified foam glass gravel kiln.

How Foam Glass Gravel is Made

Processed glass aggregate is milled into a superfine powder and combined with glycerine and sodium silicate before being heated in a kiln to 1,500°F. The glass softens at that temperature and sinters into a foam glass slab while the glycerine off-gases and creates a network of closed cell micropores.

These micropores are critical to the material's insulating properties, moisture resistance, and compressive strength. As the foam glass slab exits the kiln and quickly cools, thermal stress causes it to fracture into gravel-sized pieces.

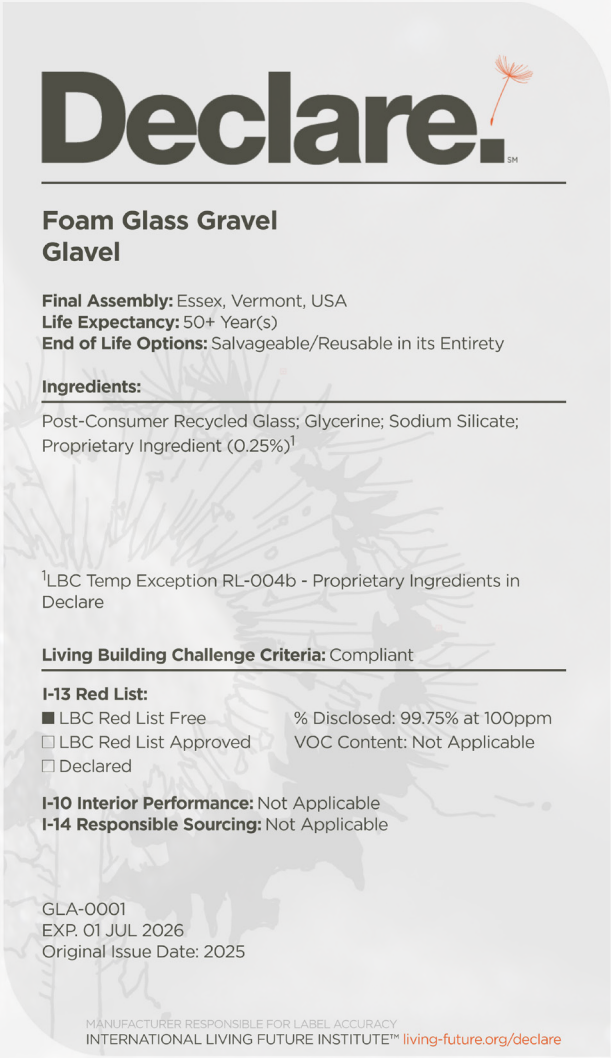
The resulting foam glass gravel is stable, inert, non-combustible, and highly durable; well-suited for a broad range of construction applications, including sub-slab insulation, green roofs, and other load-bearing fill applications.

Material Transparency

Glavel is committed to full material disclosure and third-party verification to support informed decision-making in low carbon design.

Our Environmental Product Declaration (EPD) reports Glavel's environmental impacts across a cradle-to-gate scope (A1–A3), covering raw material extraction, transportation, and manufacturing. Developed in accordance with ISO 14025, EN 15804 and ISO 21930:2017, the EPD enables direct comparisons within product categories and is fully integrated into the EC3 (Embodied Carbon in Construction Calculator) platform for streamlined benchmarking and specification.

Glavel also holds a Declare Label verifying that the product is Red List Free. This supports material health goals across programs like the Living Building Challenge, LEED v4.1/5, and WELL. By combining verified embodied carbon data with material health transparency, Glavel empowers designers and builders to meet both performance and sustainability targets without compromise. This commitment reflects our broader mission to make the construction industry cleaner, healthier, and more accountable.



Declare.

Foam Glass Gravel
Glavel

Final Assembly: Essex, Vermont, USA
Life Expectancy: 50+ Year(s)
End of Life Options: Salvageable/Reusable in its Entirety

Ingredients:

Post-Consumer Recycled Glass; Glycerine; Sodium Silicate; Proprietary Ingredient (0.25%)[1]

[1]LBC Temp Exception RL-004b - Proprietary Ingredients in Declare

Living Building Challenge Criteria: Compliant

I-13 Red List:
■ LBC Red List Free
□ LBC Red List Approved
□ Declared

% Disclosed: 99.75% at 100ppm
VOC Content: Not Applicable

I-10 Interior Performance: Not Applicable
I-14 Responsible Sourcing: Not Applicable

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MANUFACTURER RESPONSIBLE FOR LABEL ACCURACY
INTERNATIONAL LIVING FUTURE INSTITUTE™ living-future.org/declare

As the construction industry increasingly prioritizes low-carbon design, material choices beneath the slab can have a significant impact on a project's total embodied carbon. Below is a comparison of sub-slab insulation assemblies, measured by total Global Warming Potential (GWP) in kg CO_2e per square meter for assemblies providing equivalent thermal performance.

Embodied Carbon Comparisons per m² at R20

Assembly	**Total GWP** (kg CO2e / m²)	**GWP Increase vs Glavel Assembly**
Glavel	7.71	-
Type IX EPS + #57 Stone	17.20	123.05%
Type IV XPS* + #57 Stone	33.29	331.49%

*Includes B1 and C4 to account for blowing agent emissions during installation and disposal.

Technical Data

Density (Unit Weight)
Uncompacted dry bulk density (ASTM C29).....9 - 10pcf

Estimated Dry Density
1.11 Compression Ratio (10% compaction of each lift).....10 - 11pcf
1.25 Compression Ratio (20% compaction of each lift).....11.25 - 12.5pcf

Compressive Strength (EN 1097-11)
20% compaction.....100-110psi
30% compaction.....150-160psi

Typical Gradation Characteristics (uncompacted) (ASTM C136 / ASTM C117)
Measured in sieve size
4”.....100%
2”.....85-100%
3/8”.....0-15%

Physical Characteristics
Hydraulic conductivity (ASTM D2434-68).....0.086 cm/s
Moisture content
Volumetric.....0.47%
Gravimetric (ASTM C566).....0.62%
Particle Specific Gravity (ASTM C127).....0.54

Soundness
Sodium sulfate (ASTM C88).....4.7% - 5.3% loss

Impurities
Clay lumps (ASTM D4791).....0
Organic impurities (ASTM C40).....0

Chemical Characteristics
Sulfates (AASHTO T 290).....<10ppm
Chlorides (AASHTO T 291).....<10ppm
TCLP (SW 846).....Non-leaching

Foam Glass Gravel Advantages

Frost Heave Resistant - Will reduce impacts of freeze and thaw cycles
Produced from Recycled Glass - Categorized as ‘clean fill’
Non Combustible - Will not burn, nor propagate fires
Closed Cell - Closed cell structure facilitates drainage
Inert - Prevents rodents, termites, bacteria, and rot
Thermal Insulation - R1.7 per compacted inch

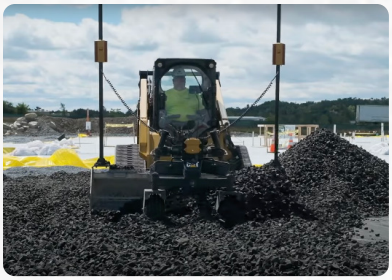
Sub-Slab Insulation Installation Guidelines

Geotextile Prep

Lay a geotextile in the base of the area where Glavel will be installed. A 4oz/yd nonwoven geotextile with 120 grab tensile strength is recommended. This keeps Glavel separated from other materials.

Install Glavel

Install Glavel into the specified area. If bags are being used, they can be moved around site with an excavator or crane and emptied directly into the specified area. If Glavel is being used in bulk it can be moved into the specified area with a loader, excavator, bobcat, etc. Avoid driving machinery over Glavel to prevent overcompaction.



Level Glavel

Depending on the size of the specified install area, Glavel should be leveled by small machinery such as a Bobcat or a bulldozer with LGP tracks. Leveling the area to a rough flatness will ease compaction. Installation should be phased in 15” precompacted lifts to ensure even compaction is achieved.

Compact Glavel

Compaction is done with a lightweight vibratory plate (<200lbs). Glavel is compacted at a 1.3 : 1 ratio, which can be achieved with 4-5 full compaction passes. Additional compaction will increase material consumption but will not change Glavel’s material properties. Successful compaction achieves a grade of ±1”.

Cover with Geotextile and Vapor Barrier

Complete the installation by wrapping the top and sides of the installed Glavel with a geotextile and vapor barrier.

Delivery

Glavel is delivered bulk or in 3 cubic yard supersacks. Bulk deliveries are done with a walking floor trailer with 130 cubic yards per truck. Bagged deliveries in supersacks are done on a flatbed trailer with up to 24 bags per truck. Customers are responsible for unloading bags and specifying delivery drop off locations. Excavators are commonly used for unloading. Customer pickup can also be arranged from our manufacturing plant in Essex, Vermont.

Bulk delivery, 130cy per truck

Bagged delivery, 72cy per truck

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