

BioBasedTiles[®]

PRODUCT DATA



Solving Cement

THE PROBLEM - CO₂ EMISSIONS

Ordinary Portland cement (OPC) accounts for 8% of all global carbon dioxide emissions. As demand for cement and concrete continues to grow, it is more imperative than ever to invest in technology that eliminates construction's climate impact.

OPC requires the combustion of fuels to heat limestone to 1450°C to produce clinker, which is then ground down to make cement for concrete. The calcination process requires enormous amounts of energy and releases CO₂ as a byproduct. Biomason[®] makes cement in a fundamentally different way.

WHY BIOMASON IS DIFFERENT

The core technologies of Biomason revolve around the creation of Biocement[®], replacing OPC and working to reduce environmental impacts from the construction industry. Harnessing the power of biology, enzymatic processes from microorganisms grow durable cement.

The bacteria in our Biocement[®] material are activated and then precipitate carbon and calcium to produce a biologically forged calcium carbonate, CaCO₃ — the same material as coral skeletons, seashells, and limestone. Biomason's Biocement[®] technology uses carbon as a building block without the need for kilns to burn limestone.

BIOMASON BIOCEMENT[®] TECHNOLOGY

Biomason's Biocement[®] uses carbon as a building block, without the need for kilns to burn limestone. Biocement[®] forms through multiple patented, biological processes.

Biomason's current products, BioBasedTiles[®], do have cradle-to-gate carbon emissions, largely associated with raw material supply chains. However, Biomason is building pathways to producing carbon-neutral construction materials as we continue to drive down production impacts and transition to carbon-negative systems as Biomason works with emerging low-carbon supply chains.



Product Description

BASIC USE

Biomason BioBasedTiles® is appropriate for interior use in commercial, institutional, and residential building projects.

BioBasedTiles® are used in vertical-facing assemblies and installed on a support wall with adhesive or mechanical systems, or adhered onto a fixed substrate in horizontal conditions.



Flooring



Kitchens



Walls

COMPOSITION AND MATERIAL

BioBasedTile® is manufactured from locally-sourced aggregate and biologically generated calcium carbonate Biocement® material, resulting in modular units with one or more finished faces. They are formed by vibratory compaction in a semi-dry mix and cured in ambient temperatures, reaching full strength in less than three days.

SIZES

BioBasedTile® is available in a standard size, as outlined in Table 1.

Table 1: Standard Sizes, Denmark Factory

Product Code	Length	Width	Depth
BL-4004-	400 mm	40 mm	19 mm
BL-4020-	400 mm	200 mm	19 mm

TOLERANCES

BioBasedTile® does not shrink during curing. Units are measured according to EN 14716-16.

LIMITATIONS

BioBasedTiles® is intended for above-grade applications. Manufactured masonry units, regardless of composition, are inherently absorptive and are not intended for below-grade applications.

COLORS

Biomason Biocement® material is translucent white in color, which reveals the color of the underlying base aggregate. Variations to aggregate color and tone are achieved using inert pigments resulting in homogeneous through-body coloration. Standard colors are outlined in Table 2.

Table 2: Standard Colors, Denmark Factory

Color Code	Description
-GIN-	Aggregate - Ginger
-PEP-	Aggregate - Pepper

BioBasedTile® is inspected for color consistency. Slight variations between batches may occur, and it is recommended that the installer mix units from different skids during installation.

Custom colors, variations, insets, and decorative effects are available on a minimum-order basis.



Ginger



Pepper

Technical Data

PERFORMANCE STANDARDS

BioBasedTile® meets and exceeds the physical properties for common standards (EN and ASTM). Complete testing data is available upon request.

Table 3: Product Specification

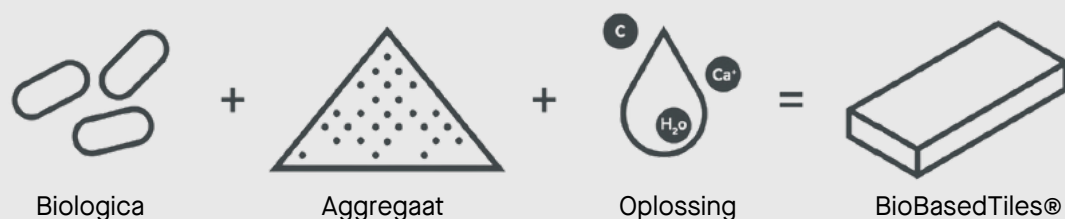
Parameter	Test Standard	Value
Configuration	EN 14617-16	in Table 1
Compressive Strength	Internal methods ¹	30.0 MPa
Flexural Strength	EN 14617-2	>4.0 MPa
Tensile Bond Strength	EN 12004-2	>1.0 MPa
Density	EN 14617-1	>1800 kg/m ³
Water Absorption	EN 14617-1	<10%
Resistance to Mechanical Wear	DIN 51130	R12
Reaction to Fire	EN 13501-1	Class A1 ²
Anti Slip Rating	PTV / R	50 / R12

¹ Closely follows the EN 772-1 standard.

² The product has an organic content of less than 1% and is therefore classified as class A1 in accordance with EN 13501-1 and Delegated regulation 2016/364.



PROCESS



ENVIRONMENTAL IMPACT

Biomason Biocement[®] material products are formed in ambient temperatures and without using fossil fuels. BioBasedTiles[®] are composed of ~85% aggregate (locally sourced based on manufacturing facility location) and 15% Biocement[®] by mass. Calcium carbonate Biocement[®] contains 44% sequestered carbon dioxide (CO²) by mass obtained from industrial sources.

CERTIFICATIONS

- ◆ ILFI™, Declare Red List Free
- ◆ Health Product Declaration
- ◆ SundaHus Material Data
- ◆ Listed in the database for building products that can be used in Nordic Swan Ecolabelled buildings
- ◆ Mindful Materials
- ◆ CE Marking: BioBasedTiles[®] produced in the North Carolina pilot factory using the US aggregates and process technology have been CE Marked earlier this year. BioBasedTiles[®] produced in the Denmark factory will undergo similar testing in view of obtaining CE Marking, expected before the end of 2023.

SUSTAINABILITY

BioBasedTiles[®] have many sustainability features applicable to different building rating systems. This includes LEED v4.1, WELL v2, BREEAM, and DGNB. A detailed list is available upon request.

Applicable certifications/declarations:

- ◆ HPDv2.1
- ◆ Declare Red List Free
- ◆ Various 3rd Party Test Data

Installation

DELIVERY

BioBasedTiles® are shipped to the specified delivery location on standard shipping pallets with a per-pallet weight of less than 1000 kg (2205 lbs).

STORAGE

Place a moisture barrier between the ground and the pallet to prevent exposure to moisture. Keep tiles at least 3 in (7.62 cm) above grade for the duration of storage.

WORKABILITY

BioBasedTile® may be cut using a standard wet saw with a diamond-abrasive blade. An angle grinder fitted with an appropriate cutting blade and a dry saw equipped with a suitable cutting blade and vacuum may also be used.

INSTALLATION

Install BioBasedTile® following all applicable codes, standards, and any local requirements, as well as our installation guide.

A solid support system must be provided. Suitable options include wood studs, steel studs, poured concrete, and unit masonry (CMU or brick) in vertical assemblies. A reinforced concrete slab is required for horizontal assembly. Installation on other substrates may be possible.

Adhesive attachment methods must be tested and approved for a minimum shear strength of 345 kPa (50 psi) following EN 1052-3, Clause 5.3.13 or ASTM C482.

Horizontal applications require compliance with applicable codes regarding the coefficient of friction.

Biomason Biocement® material is a calcereous material similar in composition to limestone. Metal components in contact with BioBasedTile® should be non-corrosive to prevent discoloration. Non-magnetic austenitic types 302 and 304 stainless steel may be used without protection according to acceptable industry methods.

Refer to the BioBasedTiles® Installation & Care Guide for additional information on installation, care, and maintenance.

Availability and Cost

Delivery times for orders will vary based on the size and complexity of the order.

Cost is quoted on a per-project basis.

Warranty

For warranty conditions, see the BioBasedTiles[®] Limited Warranty documents.

Maintenance

Clean BioBasedTile[®] following the cleaning guidelines in the installation guide. Never use acid-based cleaners such as vinegar, citrus-based products, or muriatic acid on BioBasedTile[®].

Always pre-test cleaning agents and methods on the job-site mock-up or an inconspicuous area of the surface. The consultant and/or owner should approve the test area before the start of full-scale cleaning operations.

Additional maintenance considerations can be found in the BioBasedTiles[®] Installation & Care Guide.

We invite everyone to discover the possibilities of BioBasedTiles[®] and to make sustainable building the standard together.

StoneCycling

Sustainable Building Materials

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