



BUILDING ON GLASS

Bi-Foam GFA 160

10/80mm Glass Foam Aggregate

DESIGN DATA

1. **Bi-foam** is an aerated glass foam aggregate manufactured from 100% recycled waste glass.
2. **Bi-foam** is lightweight having a loose bulk density typically 130-170kg/m³.
3. Uses of **Bi-foam** include:
 - Load bearing thermal insulation beneath floor slabs and providing a complete replacement for traditional hard-core, blinding, over site concrete and expanded polystyrene insulation construction or precast beam and block and polystyrene insulation flooring.
 - Load bearing thermal insulation beneath foundations
 - Light weight fill for embankments
4. **Bi-foam** is chemically inert and complies with requirements for Environmental Compatibility.
5. **Bi-foam** does not present any hazard to the Health and Safety of persons involved with its installation or use.
6. **Bi-foam** is non-combustible, frost resistant, self- draining and unattractive to vermin.
7. Design characteristics of **Bi-foam**

Nominal Value for compressive strength $f_{c,nom}$	Nominal value for compressive stress $f_{cd} = f_{c,nom} / \gamma_M \cdot \alpha$	Constrained modulus of the thermal insulation layer E_s
550 kPa	170 kPa	5000 kPa

General building inspectorate approval

The standards: **DIN EN 1997-1** ²⁹ **DIN EN 1997-1 NA** ³⁰
 DIN1054 ³¹ **DIN 1054/A1** ³²

8. Design thickness of **Bi-foam**

Minimum compacted thickness 160mm.

Maximum compacted 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 900mm.
- Compaction ratio i.e. loose to compacted state 1.3:1.
- *Excellent heat conductivity 0.072 ...0.083 W/(mk) DIN EN 12667*

U-Values achieved using **Bi-foam** – Guideline only

U – Values (W/m ² K)	Loose thickness (mm)	Compacted thickness (mm)
0.50	208	160
0.40	267	205
0.30	319	245
0.25	390	300
0.22	455	350
0.20	475	365
0.12	865	665
0.10	962	740

9. Design considerations/requirements: -

- For sub-soils that are not free draining i.e. cohesive (clay) soils, drainage is to be provided. See specific Project design drawings/details.
- If the natural standing ground water level is less than 300mm below the base of **Bi-foam** a capillary moisture barrier is to be provided.
- The formation level is to be trimmed and any loose material removed to provide a uniform surface and ensure a uniform thickness of **Bi-foam** throughout. Inspection/approval of formation as required.
- A NON- WOVEN geotextile 120gm/m² to 150gm/m² separation membrane is to be provided which is to be wrapped up the edges of the completed **Bi-foam** and lapped with the surface geotextile – see below
- A NON -WOVEN geotextile 120gm/m² to 150gm/m² separation membrane is to be provided to the compacted surface of **Bi-foam**.
- When using **Bi-foam** in conjunction with insulated foundations it is good practice to extend the **Bi-foam** beyond the face of the foundation to allow effective load dispersal and ensure the presence of properly compacted material beneath the foundation.
- Foundation bearing strata to be verified as normal.
- The maximum imposed stress applied to **Bi-foam** must not exceed the **value for** compressive stress as provided in item 7 above nominal.
- When assessing settlements of foundations, in addition to anticipated settlements of the foundation soil(s), deformation of **Bi-foam** should also be considered and assessed in accordance with the constrained modulus provided in item 7 above.