

Clayboard®

void formation system



preventing structural damage from clayheave



DUFAYLITE®

Dufaylite Clayboard® void formation

The Natural Threat of Clayheave

The damage risk posed by natural shrinkable clay soils is well known to engineers and builders. Changes in the soil water content cause shrinkage or expansion which, if not properly accommodated, can exert intolerable pressure on any building standing on the site causing structural damage.

Shrinkable clay soils are present all around the world. In the UK, these soils can be found deposited throughout the country and most commonly in the South East, falling in an area between Exeter and Hull. However, climatic changes are now affecting similar soils in the North.

With the increasing occurrence of droughts, geological conditions have worsened with clay soils compacting and drying out. Tree roots search out an increasingly deeper and lower water table, and rainfall has little impact.

How Clayboard® Works

Clayboard® is a unique, environmentally friendly void former and foundation stabiliser developed by Dufaylite. Clayboard® is a biodegradable honeycomb core set between lightweight polypropylene facings.

When dry, Clayboard® is strong enough to support the weight of wet concrete and steel reinforcement.

Water is introduced to the Clayboard® core once the concrete is set, degrading the Clayboard® honeycomb centre which will ultimately lead to the creation of a void. This space will accommodate clay expansion without exerting undue pressure on the structure above.

The resulting void continues to accommodate natural soil shrinkage and expansion.

EVALUATING SOIL TYPES AND RISKS

Soil analysis is essential to determine the suitability of potential sites and the required foundation protection.

Plasticity Index (PI) %	Shrinkage Potential
greater than 40%	High
20% - 40%	Medium
10% - 20%	Low

Shrinkable soils are classified by their **Plasticity Index**, which can itself be affected by changes to the immediate environment. For example, the removal of a single tree can add as much as 150 litres of water a day to the soil. The blanket removal of trees will make exaggerated clayheave almost inevitable.

Clayheave assessment should be carried out by a soil testing laboratory. The depth of void required to protect a structure from ground expansion and contraction is then specified by the soil engineer.

We recommend you refer to the appropriate Codes of Practice, BRE Digests and NHBC Guidelines for technical information on shrinkable soils and their structural implications.

Clayboard® has won **British Board of Agrément Certification** for all types of residential, commercial and industrial buildings.

Clayboard® Void System Benefits

- Helps prevent structural building damage caused by clayheave.
- Suitable for all types of structure including residential, industrial and commercial buildings.
- Up to 50% slimmer than other systems saving on soil excavation and removal.
- Exerts virtually no pressure on ground slabs preserving building integrity.
- Strong enough to support poured concrete.
- Unique honeycomb core creates calculable void without compression.
- Kind to the environment.
- Slimness of product is ideal for retrofit underpinning.
- Easy to cut and install.
- Cost effective.

The Advantages of Clayboard®

Apart from the immediate advantages of a slimmer product requiring shallower foundations and less soil extraction, Clayboard® has specific advantages over other methods of void creation.

Industrial & Commercial Buildings

Traditional clay heave systems can exert considerable pressure on ground slabs during the compression process. Clayboard® is unique, with its central core designed to collapse under just 3kN/m² pressure.

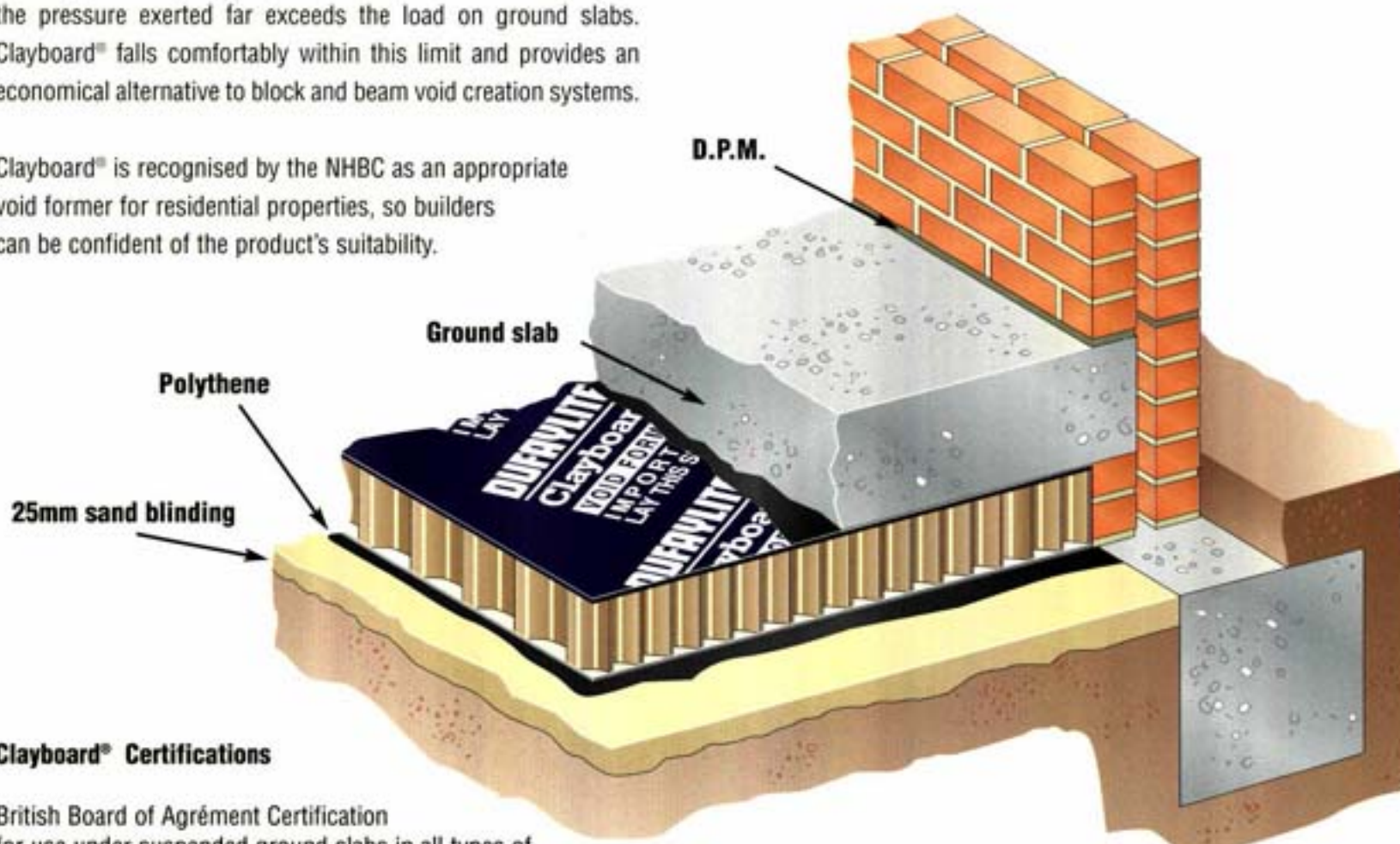
Residential Buildings

Some types of clay heave systems are unsuitable for housing as the pressure exerted far exceeds the load on ground slabs. Clayboard® falls comfortably within this limit and provides an economical alternative to block and beam void creation systems.

Clayboard® is recognised by the NHBC as an appropriate void former for residential properties, so builders can be confident of the product's suitability.



Clay areas are predominantly found in the shaded areas, although climatic changes have resulted in a more widespread clay heave problem.



Clayboard® Certifications

British Board of Agrément Certification
for use under suspended ground slabs in all types of
residential, commercial and industrial buildings.

Dufaylite Developments Limited has been certified as a company
of Assessed Capability to BS EN ISO 9002:1994, registration
number Q10065

See the following British Standards for further guidance:

- BS8004** Code of Practice for Foundations
- BS6399** Loading for Buildings
- BS8103** Structural Design of low rise Buildings



Technical Specification

Sizes:

Clayboard® is supplied in panels 2440mm long by 1000mm wide, by the specified thickness. Clayboard® is delivered to site on lightweight pads for easy unloading, and is polythene wrapped for protection.

Thickness:

The thickness of Clayboard® depends on the depth of the required void which should be specified by the soil engineers taking into account the plasticity index.

Examples of Clayboard® thickness required

Clayboard thickness	Void
160mm	150mm (<i>high shrinkage</i>)
110mm	100mm (<i>medium shrinkage</i>)
85mm	75mm (<i>medium shrinkage</i>)
60mm	50mm (<i>low shrinkage</i>)

Compressive strength:

Clayboard® is available in two standard strengths, KN30 and KN90. KN30 has a nominal compressive strength of 30kN/m² when dry and is designed to support the weight of wet concrete up to 1m thick. KN90 has a nominal compressive strength of 90kN/m² when dry and is recommended for concrete slabs thicker than 1m.

When the core is wetted, both KN30 and KN90 Clayboard® will collapse under nominal compressive load of approximately 3kN/m².

Health & Safety:

The materials used in Clayboard® do not constitute a risk to the Health and Safety of users in the course of site application in the recommended manner. It is the user's responsibility to adopt relevant safe practices when handling, stacking, cutting and installing Clayboard® panels. Clayboard® panels are safe to handle with no dust and no harmful emissions.

Ancillary Products - Voidpak System

With your Clayboard® delivery, we can also supply the Voidpak System which comprises:

Pipes:

32mm diameter pre-shaped and with fixed flange length to suit 200mm, 400mm and 600mm slab thicknesses. Quantity to order.

Caps:

End caps for each pipe.

Polythene bags:

Nominal 500g to suit cut Clayboard® of length 2.44m. Widths: to suit 400mm, 600mm, 900mm and 1220mm.

Waterproof tape:

50mm wide in 66m rolls.



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