



Heave Stopper

Protecting structures against clay heave and ground movement



Improving choice, quality and service

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Rehydration of desiccated and compacted shrinkable soils are the main reasons for clay heave



The removal of one tree can add as much as 150 litres of water a day to soil



Widespread removal of trees creates conditions that heighten the risk factors for clay heave.

NHBC chapter 4.2 building near trees

Clay heave & ground recovery

Groundbeams and slabs can be cracked by the pressure that ground movement causes when concrete foundations are built on shrinkable soils such as clay and expansive shale soils, or when development is on reclaimed land or subject to ground recovery caused by deep excavations.

The structural damage caused by clay is well understood by engineers and designers all over the world. Here in the UK the problem is particularly acute in the South East although climate change is having its effect on soils in other parts of the country.

The solution is to create a space between ground and foundation which soils can expand into

Heave Stopper – forming a true void

Unlike other solutions Heave Stopper creates a complete void beneath the foundation to offer maximum protection from ground movement.

Heave Stopper is a board constructed from a cardboard honeycomb core set between water resistant facings.

When dry, the boards have a compressive strength that can support concrete and steel up to 1 metre thick without deflection or creep compression. Once the concrete is cured and self supporting, Heave Stopper's job is done. Water is now introduced to the core, and in this process Heave Stopper yields to ground heave without transmitting pressure to the structure. Eventually, the board will naturally disappear to leave a permanent 100% void with no residual density to pass on heave stresses.

This can allow engineers to design thinner slabs and beams using less concrete and reinforcement.

Heave Stopper can also be used to create a void to protect structures from vibration.

Using Heave Stopper protects your buildings against the forces of ground movement

The maximum NHBC void from just 160mm board

Heave Stopper is the ultimate reduced dig solution for void creation

- The slimmest method of void creation
- Less excavation, muck away & landfill
- A perfect solution for contaminated land and brownfield sites
- Ideal for sites with restricted access
- The dense cell structure of the board creates a solid working surface that doesn't need hardboard or concrete blinding
- Lowest possible forces transmitted to the structure
- BBA & NHBC approved

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St Neots 01480 702222 Airdrie 01698 907101 Warrington 01925 202128
e sales@miersconstructionproducts.co.uk w www.miersconstructionproducts.co.uk

Heave Stopper - why it works best

FAST

Light and easy to use, Heave Stopper can be installed at a rate of 50m² per hour or more by one operative.

SIMPLE

Heave Stopper can be installed either side up, is easily cut with simple hand tools and the joints do not need to be taped together.

PRACTICAL

The close cell structure means that Heave Stopper can be trimmed tightly around pile heads and service ducts without losing the integrity of the panel.

Heave Stopper is delivered on pallets to allow mechanical offload and stacking during storage. Each pallet is protected with a polythene cover. Pallets are manufactured from the same material as Heave Stopper boards and are therefore easily recycled. In addition, there is a range of ancillary items available to ensure total satisfaction for every installation.

These include:

- Void Pipe
- Polythene sheeting
- Lay flat tubing
- Waterproof tape
- Reinforcement spacers



Protecting structures against clay heave and ground movement

Environmental benefits

The environmental and sustainability credentials of Heave Stopper are second to none

- Efficiency of void creation means less excavation, muck away, vehicle movements and landfill
- Design thinner slabs and beams using less concrete and reinforcement
- The core and facings are manufactured from 100% recycled materials
- Materials are FSC approved
- Naturally biodegradable
- Easily recycled in normal waste streams. No need for collections from site and processing at specialist facilities

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Specifiers' guide

Heave Stopper is straight forward to specify. All Heave Stopper boards will satisfy the requirements for beams, slabs and concrete thickness up to 1 metre. For concrete pours over 1 metre a special grade of Heave Stopper is available.

Simply select the correct thickness to accommodate the heave potential of the ground based on site investigation and soil analysis results. Further guidance on predicted ground movements in shrinkable soils is given in the NHBC Standards 2013, Chapter 4.2.

The thickness of Heave Stopper should be equal to the required void plus 10mm.

See table below.

Soil Analysis Result	NHBC Category	Predicted Ground Movement potential or BRE/ NHBC requirement	Heave Stopper
Plasticity index	Shrinkage potential	Void	Thickness
10 – 20	Low	50mm	60mm
20 – 40	Medium	75mm	85mm
20 – 40	Medium	100mm	110mm
40 – 60	High	150mm	160mm

Heave Stopper has a compressive strength of 30kn/m².

When dry, it is designed to have sufficient strength to support wet concrete and steel up to 1 metre thick. When the core is wetted it will yield to the pressure of ground movement with less than 3kn/m² of transmitted force to the structure above.

The board's mechanical properties have been independently tested at the BRE Innovation Park. Tests show that the initial saturation procedure leaves just 10mm of material in the void zone.

Ultimately a 100% clear void is created which is in excess of the specified requirements and with zero kn/m² of transmitted force.

Heave Stopper can also be used horizontally and vertically to create a void to protect structures from vibration.

Board size

Heave Stopper is supplied in boards 2400mm long by 1200mm wide, by the specified thickness



Branches