



Vencel Resil Ltd

Arndale House
18-20 Spital Street
Dartford
Kent DA1 2HT
Tel: 01322 227299 Fax: 01322 294250

**Agrément
Certificate
No 90/2543**
*Second issue**

Designated by Government
to issue
European Technical
Approvals

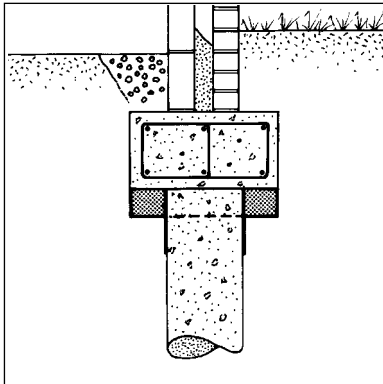
CLAYMASTER COMPRESSIBLE FILL

Remblayage comprimable
Füllungs Komprimierbar

Product

Building Regulations — Detail Sheet 1

• *THIS CERTIFICATE REPLACES
CERTIFICATE No 86/1690
AND RELATES TO CLAYMASTER
COMPRESSIBLE FILL, IN SIZES
AND TYPES REFERRED TO IN
THE ACCOMPANYING
DETAIL SHEETS.*



1 The Building Regulations 1991 (as amended 1994) (England and Wales)



The Secretary of State has agreed with the British Board of Agrément the aspects of performance to be used by the BBA in assessing the compliance of compressible fill with the Building Regulations. In the opinion of the BBA, Claymaster Compressible Fill, if used in accordance with the provisions of this Certificate, will contribute to meeting the relevant requirements.

Requirement: A2

Ground movement

Comment:

The fill prevents expansion of clay soils impairing the stability of the building.

Requirement: Regulation 7

Materials and workmanship

Comment:

The fill is acceptable.

2 The Building Standards (Scotland) Regulations 1990 (as amended)



In the opinion of the BBA, Claymaster Compressible Fill, if used in accordance with the provisions of this Certificate, will satisfy or contribute to satisfying the various Regulations and Standards as listed below.

Regulation: 10

Fitness of materials

Standard: B2.1

Selection and use of material and components

Comment:

The fill is acceptable.

Regulation: 11

Structure

Standard: C2.1

Construction

Comment:

The fill contributes to meeting the relevant requirements of this Standard.

3 The Building Regulations (Northern Ireland) 1994



In the opinion of the BBA, there are no requirements in these Regulations pertaining to the use of Claymaster Compressible Fill.

Conditions of Certification

4 Conditions

4.1 The quality of materials and the method of manufacture have been examined and found satisfactory by the BBA and must be maintained to this standard during the period of validity of this Certificate. This Certificate will remain valid for an unlimited period provided that:

- (a) the specification of the product is unchanged, and
- (b) the manufacturer continues to have the product checked by the BBA.

4.2 Where reference is made in this Certificate to any Act of Parliament, Regulation made thereunder, Statutory Instrument, Code of Practice, British Standard, manufacturer's instruction or similar publication, it shall be construed as reference to such publication in the form in which it is in force at the date of this Certificate.

4.3 In granting this Certificate, the BBA makes no representation as to the presence or absence of patent rights subsisting in the product and/or as to the legal right of Vencel Resil Ltd to market, install or maintain the product.

4.4 It should be noted that any recommendations relating to the safe use of this product which are contained or referred to in this Certificate are the minimum standards required to be met when the product is used. They do not purport in any way to re-state the requirements of the Health and Safety at Work etc Act 1974, or of any other statutory or Common Law duties of care, or of any duty of care which may in the future exist; nor is conformity with such recommendations to be taken as satisfying the requirements of the 1974 Act or of any other present or future statutory or Common Law duties of care. In granting this Certificate, the BBA does not accept responsibility to any person or body for any loss or damage incurred in respect of personal injury arising as a direct or indirect result of the use of this product.



In the opinion of the British Board of Agrément, Claymaster Compressible Fill is fit for its intended use if used as set out in this Certificate. Certificate No 90/2543 is accordingly awarded to Vencel Resil Ltd.

On behalf of the British Board of Agrément

A handwritten signature in black ink, appearing to read 'P. C. Newstead', is written over a light grey background.

Date of Second issue: 2nd May 1995

Director

**The original Certificate was issued on 31st October 1990. This amended version includes the incorporation of the Building Regulations part into the Front Sheets, reference to the revised Building Regulations and replacement of Detail Sheet 2.*



Vencel Resil Ltd

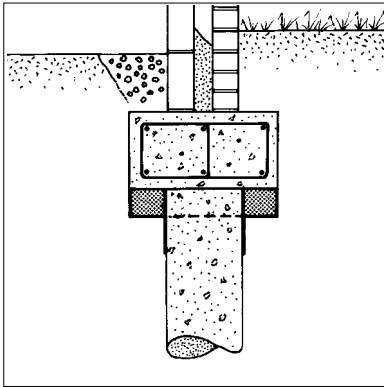
Certificate No 90/2543

CLAYMASTER COMPRESSIBLE FILL LOW DENSITY EXPANDED POLYSTYRENE BOARDS

DETAIL SHEET 3

Second issue*

Product



• THIS DETAIL SHEET REPLACES DETAIL SHEET 2 AND RELATES TO CLAYMASTER COMPRESSIBLE FILL LOW DENSITY EXPANDED POLYSTYRENE BOARDS.

- The product is for use below concrete groundbeams of a maximum depth of 600 mm, in piled foundation construction, and at the vertical face of deep trench foundations, to reduce the pressure exerted on the concrete by expansion of clay soils (clay heave) during the life of the structure.
- It is essential that the correct minimum thickness is calculated from the expected expansion, and that the product is installed in accordance with the Installation part of this Certificate.

This Detail Sheet must be read in conjunction with the Front Sheets which give Conditions of Certification and the product's position regarding the Building Regulations, respectively.

Technical Specification

1 Description

1.1 Claymaster Compressible Fill consists of low density expanded polystyrene boards, coloured pink.

1.2 The boards are available in the standard sizes shown in Table 1.

Table 1 Board sizes (mm)

Thickness	Length*	Width*
50	2400	600 or 1200
75	2400	600 or 1200
100	2400	600 or 1200
150	2400	600 or 1200
200	2400	600 or 1200

*Non-standard sizes are available from the manufacturer.

1.3 Quality control checks are carried out during manufacture, on:

density of the polystyrene beads
weight of the boards
load/deformation characteristics.

2 Delivery and site handling

2.1 Claymaster board packs are normally delivered to site polythene wrapped. Each pack carries a label bearing the manufacturer's name, product description, essential instructions for installation and the BBA identification mark incorporating the number of this Certificate.

2.2 The product must be stored flat and protected from high winds and prolonged exposure to sunlight.

Design Data

3 General

3.1 Claymaster Compressible Fill, when designed and installed in accordance with the recommendations of this Certificate, is effective in reducing the pressure exerted on groundbeams in piled foundation construction, and on the sides of trench-fill foundations up to two metres deep.

3.2 It is important that the whole of the underside of concrete members be protected with Claymaster to prevent differential loading on the member.

3.3 Each installation must be designed from the following information:

For groundbeams and pile caps

(1) The maximum likely vertical ground movement due to clay heave (H mm) established from the site investigation.

(2) The acceptable upward pressure on the concrete (P kNm⁻²) as used in the concrete design.

For trench-fill foundations

(1) The expected lateral movement due to clay heave (H mm) established from the site investigation.

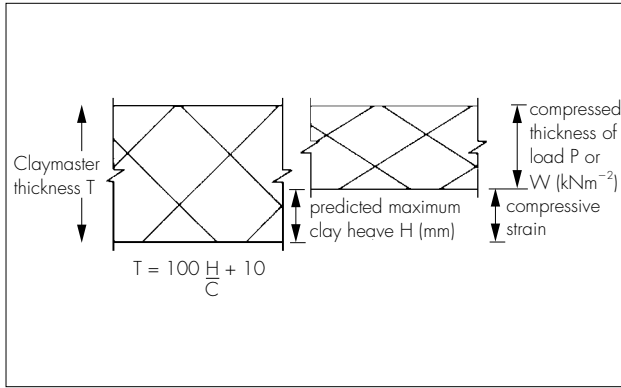
(2) The maximum acceptable lateral pressure on the foundation as used in the concrete design (W kNm⁻² — W must not exceed 40 kNm⁻²).

3.4 The thickness of Claymaster is then established by (see Figure 1):

- (1) finding the value of the compressive strain (C %) from Graph 1 (using design value for P or W — see section 3.3), and
- (2) calculating the thickness of Claymaster required (T mm) from the formula:

$$T = 100 \frac{H}{C} + 10$$

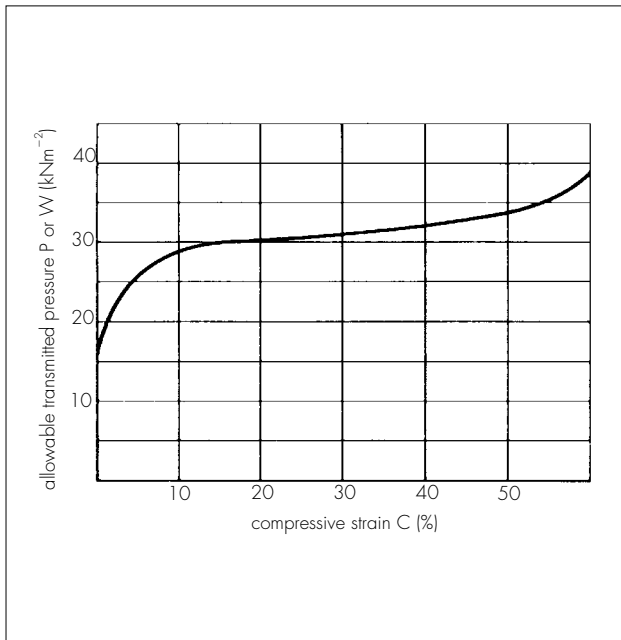
Figure 1 Determination of thickness required



4 Resistance to pressure

4.1 The pressure transmitted/strain relationship of Claymaster Compressible Fill is given in Graph 1, which is based on a strain rate of 2% per day.

Graph 1 Relationship of pressure to compressive strain



4.2 Claymaster Compressible Fill must not be used where the depth of in-situ concrete is greater than 600 mm.

5 Durability

Claymaster is dimensionally stable under varying conditions of temperature and humidity. It is rot-proof and water resistant and will remain effective as a compressible fill for the life of the building.

Installation

6 Supervision

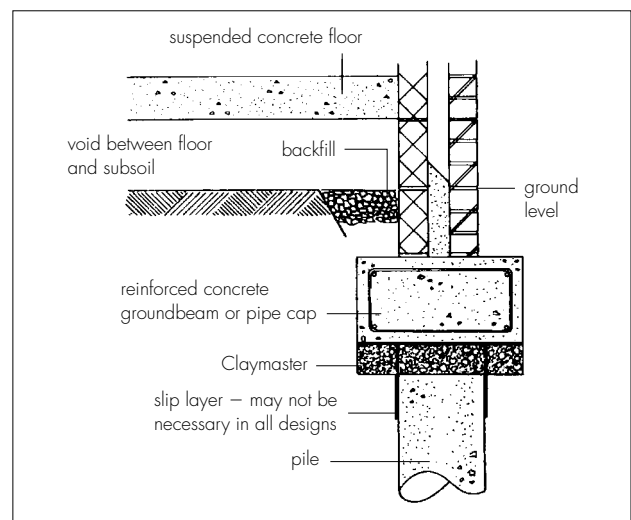
6.1 If required, Vencel Resil Ltd's specialists, experienced in site practice and installation of the material, will attend the site to provide demonstrations to ensure correct installation.

6.2 Adequate supervision of the installation must be maintained and Vencel Resil Ltd's specialists must have right of access to the site to ensure their product is being installed correctly.

7 Procedure

Under groundbeams and pile caps in piled construction (see Figure 2)

Figure 2 Detail of pile and groundbeam



7.1 The trenches are excavated as normal, but taking account of the required thickness of Claymaster.

7.2 The bottom of the excavation must be flat, even and properly compacted. In certain situations, this may require blinding the trench bottom with concrete or granular material.

7.3 The Claymaster is laid closely butted on the prepared excavation, ensuring that the whole area of the groundbeam is covered. Small gaps between boards must be backfilled with as-dug or granular material.

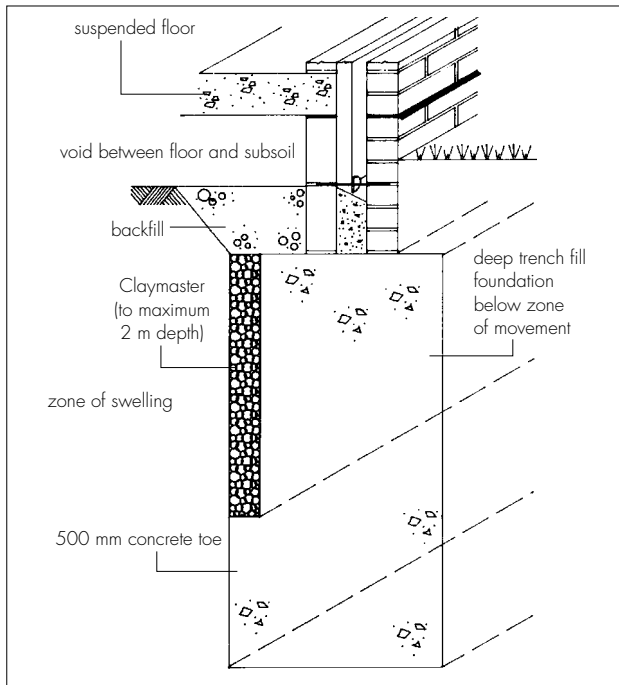
7.4 Where concrete piles protrude into the trench, the Claymaster boards should be cut to suit with a fine-toothed saw.

7.5 Sufficient concrete spacing blocks must be used to ensure that the correct depth of concrete cover to the reinforcement is achieved. The quantity and type of spacers must ensure that the load transmitted to the Claymaster does not exceed 15 kNm⁻², to prevent penetration into the Claymaster (typically 75 mm x 75 mm blocks at 500 mm centres).

Vertical faces of trench-fill foundations

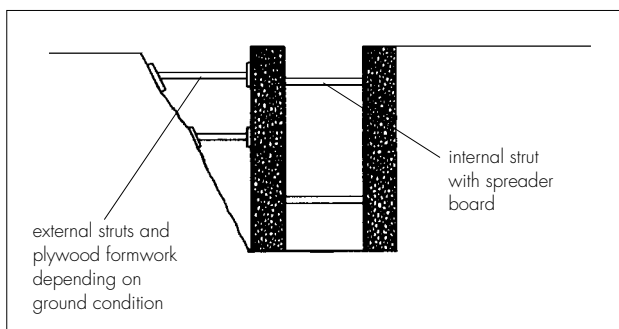
7.6 The excavation must be founded below the movement zone of the clay and the Claymaster board positioned in accordance with NHBC requirements, ie 500 mm above the bottom of the trench on the zone-of-swelling side of the excavation (see Figure 3).

Figure 3 Details of deep trench fill



7.7 To ensure that the Claymaster remains in the correct position and to prevent breakage, the Claymaster should be adequately supported on both faces prior to concreting (see Figure 4).

Figure 4 Typical installation



7.8 Internal support must be provided in the form of struts with adequate spreader plates.

7.9 External support may be provided by the face of the excavation except in flinty or boulder clay where sharp projections may cause damage and/or where the trench sides do not provide adequate support (see Figure 4).

7.10 The Claymaster must be adequately restrained to prevent uplift during concrete placement.

7.11 Small infill panels must be securely fixed in position.

The following is a summary of the technical investigations carried out on Claymaster Compressible Fill.

8 Tests

An examination was made of test data and tests were conducted to determine:

- density
- dimensional accuracy
- effect of density on pressure transmitted
- the pressure transmitted through the board when subjected to constant strain of 2% per day
- load capacity
- reduction in pressure transmitted when subjected to 50% compression
- compression under sustained loading.

9 Other investigations

9.1 The manufacturing process was examined, including the methods adopted for quality control, and details were obtained of the quality and composition of the materials used.

9.2 Site visits were carried out to assess the practicability of installation.

9.3 An assessment was made of the performance characteristics and durability of the product.



On behalf of the British Board of Agrément

Date of Second issue: 12th December 2000

Chief Executive

**Original Detail Sheet issued on 2nd May 1995. This version issued to include a new formula for calculating the thickness of Claymaster required.*