



## Tarmac Topblock Ltd

Ford Airfield Industrial Estate  
Yapton  
Nr Arundel  
West Sussex BN18 0HY

Tel: 01903 723333 Fax: 01903 711043  
e-mail: topford@tarmac.co.uk  
website: www.topblock.co.uk

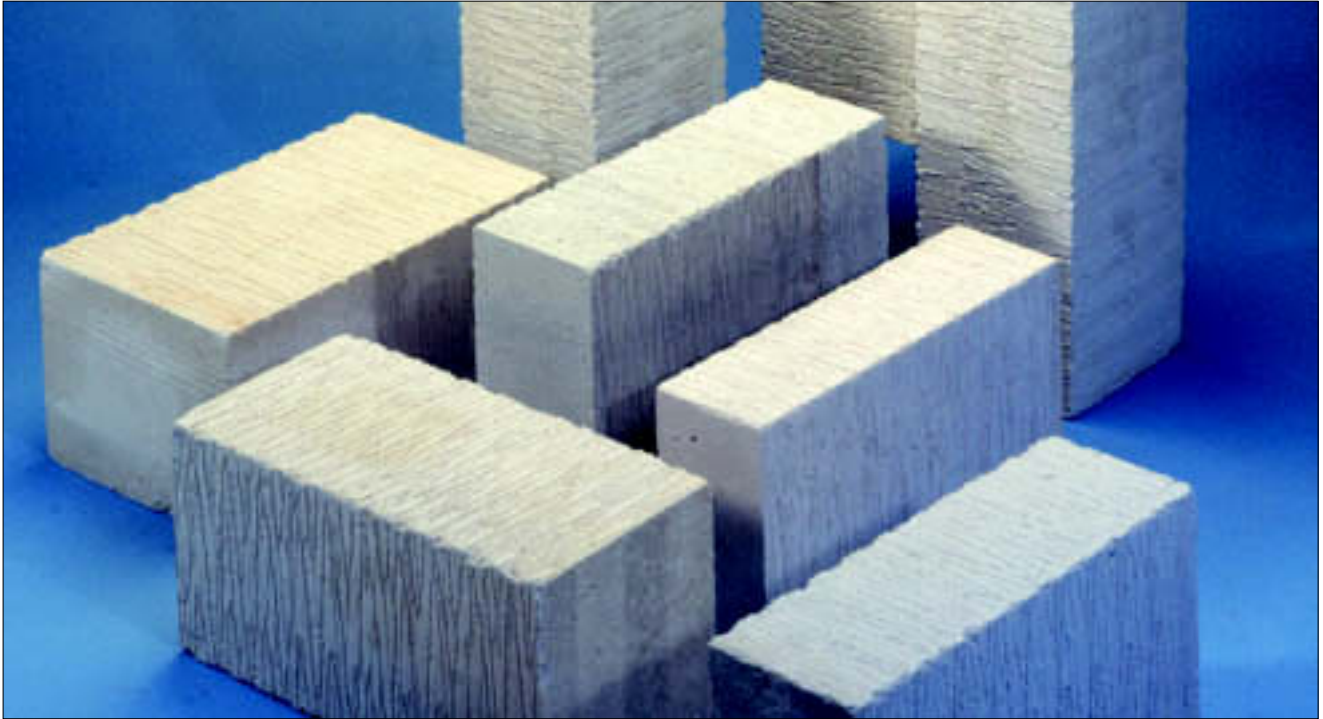
**Agrément  
Certificate  
No 02/3896**

Designated by Government  
to issue  
European Technical  
Approvals

## TOPLITE AIRCRETE BLOCKS

Blocs: Béton cellulaire autoclavé  
Gasbetonsteinen

## Product



• THIS CERTIFICATE REPLACES CERTIFICATES Nos 97/3323 AND 97/3324 AND RELATES TO A RANGE OF TOPLITE AIRCRETE BLOCKS.

• Depending on the block type (see accompanying Detail Sheets), the blocks are used:

(a) for construction of loadbearing and non-loadbearing internal and external walls above and below the damp-proof course, and inner and outer leaves of cavity walls

(b) in certain sulphate-bearing soil and groundwater conditions

(c) for flanking or separating (party) wall sound situations.

## Regulations — Detail Sheet 1

### 1 The Building Regulations 2000 (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 walls constructed from concrete building blocks with the Building Regulations. In the opinion of the BBA, walls constructed from Toplite Aircrete Blocks, if used in accordance with the provisions of this Certificate, will meet or contribute to meeting the relevant requirements listed below.

Requirement: A1  
Requirement: A2  
Comment:

Loading  
Ground movement

Walls built from the blocks will meet these Requirements provided design and construction are in accordance with section 7.2 and the *Installation* section of these Front Sheets. See also the *Technical Specification* section of the relevant Detail Sheet.

Requirement: B3  
Requirement: B4  
Comment:

Internal fire spread (structure)  
External fire spread

The blocks are non-combustible. Walls constructed from the blocks have a fire resistance as detailed in sections 12.1 to 12.3 of these Front Sheets.

Requirement: C4  
Comment:

Resistance to weather and ground moisture

Walls built from the blocks will meet this Requirement provided design and construction is in accordance with sections 7.2 and 9 of these Front Sheets.

continued

continued

continued

(d) for structures requiring an adequate resistance to freeze/thaw conditions.

• It is essential that the blocks are specified, handled and installed strictly in accordance with the conditions set out in this Certificate.

These Front Sheets must be read in conjunction with the accompanying Detail Sheets, which provide information specific to particular blocks.

# Electronic Copy

Requirement:	E1	Airborne sound (walls)
Comment:		Walls built from the blocks will meet this Requirement provided construction is in accordance with the <i>Sound insulation</i> section of the relevant Detail Sheet.
Requirement:	L1	Conservation of fuel and power
Comment:		Walls built from the blocks will meet this Requirement provided construction is in accordance with any of the alternatives detailed in the <i>Thermal insulation</i> section of the relevant Detail Sheet.
Requirement:	Regulation 7	Materials and workmanship
Comment:		The blocks form acceptable materials when specified and installed in accordance with section 7.1 and 7.2 of these Front Sheets, and sections 2 and 3 of the relevant Detail Sheet. See also section 16 of these Front Sheets.

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



In the opinion of the BBA, walls constructed from Toplite Aircrete Blocks if used in accordance with the provisions of this Certificate, will satisfy or contribute to satisfying the various Regulations and related Technical Standards as listed below.

Regulation:	10	Fitness of materials and workmanship
Standards:	B2.1 and B2.2	Selection and use of materials, fittings, and components, and workmanship
Comment:		The blocks comply with these Standards. See sections 7.1 and 7.2 of these Front Sheets and sections 2 and 3 of the relevant Detail Sheet. See also section 16 of these Front Sheets.
Regulation:	11	Structure
Standard:	C2.1	Stability
Comment:		Walls constructed in accordance with section 7.2 of these Front Sheets will comply with these Standards.
Regulation:	12	Structural fire precautions
Standard:	D2.1	Structural Protection — Principles
Comment:		The blocks can be used to meet the particular requirements as detailed in Table 3 to (D1.3). See sections 12.1 and 12.3 of these Front Sheets.
Standard:	D2.3	Structural protection — Non-combustible materials
Comment:		The blocks can be used in walls to satisfy this Standard. See section 12.2 of these Front Sheets.
Standard:	D7.1	Fire spread on internal linings — Principles
Comment:		The blocks can be used in a wall to satisfy this Standard. See section 12.2 of these Front Sheets.
Regulation:	17	Resistance to moisture
Standard:	G3.1	Resistance to precipitation
Comment:		The blocks can be used in a wall to satisfy this Standard. See section 9 of these Front Sheets.
Regulation:	18	Resistance to condensation
Standard:	G4.1	Interstitial condensation
Standard:	G4.2	Surface condensation
Comment:		Walls designed and constructed in accordance with section 7.2 of these Front Sheets can meet these Standards.
Regulation:	19	Resistance to transmission of sound
Standard:	H2.1	Walls and floors to resist sound transmission — Airborne sound
Comment:		Walls built from the blocks will satisfy this Standard provided construction complies with the conditions set out in the <i>Sound insulation</i> section of the relevant Detail Sheet.
Regulation:	22	Conservation of fuel and power
Standard:	J3.1	Building fabric — Standards for buildings in purpose group 1
Standard:	J8.1	Buildings in Purpose Groups 2 to 7 — Standards for buildings other than dwellings
Comment:		Walls constructed from the blocks can satisfy these Standards provided construction is in accordance with the solutions detailed in the <i>Thermal insulation</i> section of the relevant Detail Sheet.

# Electronic Copy

## 3 The Building Regulations (Northern Ireland) 2000



In the opinion of the BBA, walls constructed from Toplite Aircrete Blocks if used in accordance with the provisions of this Certificate, can satisfy or contribute to satisfying the various Building Regulations as listed below.

Regulation:	B2	Fitness of materials and workmanship
Comment:		The blocks are acceptable. See sections 7.1 and 7.2 of these Front Sheets and sections 2 and 3 of the relevant Detail Sheet. See also section 16 of these Front Sheets.
Regulation:	C4	Resistance to ground moisture and weather
Comment:		The blocks can be used in a wall to satisfy this Regulation. See sections 7.2 and 9 of these Front Sheets.
Regulation:	C5	Condensation
Comment:		Walls designed and constructed in accordance with section 7.2 of these Front Sheets are deemed to satisfy this Regulation.
Regulation:	D1	Stability
Comment:		Walls constructed in accordance with section 7.2 of these Front Sheets are deemed to satisfy these Regulations.
Regulation:	E4	Internal fire spread – Structure
Regulation:	E5	External fire spread
Comment:		The blocks are non-combustible, have a Class 0 surface and walls constructed from the blocks have appropriate fire resistance. See sections 12.1 to 12.3 of these Front Sheets.
Regulation:	F2	Building fabric
Comment:		Walls constructed from the blocks can satisfy this Regulation provided construction is in accordance with any of the alternatives detailed in the <i>Thermal insulation</i> section of the relevant Detail Sheet.
Regulation:	G2	Separating walls and separating floors
Comment:		Separating walls built from the blocks may be used to satisfy this Regulation. See the <i>Sound insulation</i> section of the relevant Detail Sheet.

## 4 Construction (Design and Management) Regulations 1994 (as amended) Construction (Design and Management) Regulations (Northern Ireland) 1995 (as amended)

Information in this Certificate may assist the client, planning supervisor, designer and contractors to address their obligations under these Regulations.

See section: 6 *Delivery and site handling.*

## Technical Specification

### 5 Description

5.1 Toplite Aircrete Blocks are manufactured to comply with BS 6073-1 : 1981.

5.2 The raw materials used in the production of the blocks are cement, lime, pulverised-fuel ash and sand, the proportions of which may be varied. Aluminium powder is the aerating agent. The blocks are wire-cut to the required dimensions and are cured in high-pressure steam autoclaves to increase their physical and chemical stability.

5.3 Quality control of the process is operated automatically and continuously. Control of the block production is operated to satisfy the

requirements for Special Category of Manufacturing Control as defined in BS 5628-1 : 1992 and BS 6073-2 : 1981. Raw materials are checked against chemical and physical specifications, and the final product is checked to BS 6073-1 : 1981 for compressive strength, density and dimensional accuracy.

### 6 Delivery and site handling

6.1 The blocks are supplied banded or shrink-wrapped in standard packs. All blocks may be off-loaded using mechanical grabs, or fork-lift trucks may be used for palletised blocks.

6.2 The blocks should be stored on a dry, level area and the wrapping should be kept in place until the blocks are required for use to enable the different blocks to be identified.

### 7 General



7.1 Toplite Aircrete Blocks should be specified in accordance with BS 6073-2 : 1981, including Special Category of Manufacturing Control.

7.2 Walls built from the blocks should be designed and constructed in accordance with the relevant recommendations of BS 5628-1 : 1992, BS 5628-3 : 2001, BS 5250 : 1989(1995) and BS 8103-2 : 1996.

### 8 Work below damp-proof course

The suitability of the blocks in these situations is given in the relevant Detail Sheets.

### 9 Work above damp-proof course



Walls built from the blocks and subject to the national Building Regulations should be designed and constructed as described in:

#### England and Wales

Approved Document C, Requirement C4, Section 4. In addition, the minimum block thicknesses to be used in solid rendered external walls (related to exposure as defined in BS 5628-3 : 2001) are given in Table 1.

Table 1 Minimum block thicknesses<sup>(1)</sup>

Local wind-driven rain wall spell index <sup>(2)</sup> (litres/m <sup>2</sup> /spell)	Exposure category (BS 5628-3 : 2001)	Minimum block thickness (mm)
<33	1 sheltered	90
33 to 56.5	2 moderate	140
56.5 to 85	3 severe	190
85 to 100	3 severe	215
>100	4 very severe	215

(1) Increased thicknesses may be necessary to meet other requirements such as structural stability (see section 7 of these Front Sheets), *Thermal insulation* or *Sound insulation* as detailed in the *Design Data* part of the relevant Detail Sheets.

(2) BS 8104 : 1992.

#### Scotland

Technical Standards, Part G *Provisions deemed to satisfy the Standards*.

#### Northern Ireland

Technical Booklet C, and section 7 of this Certificate.

### 10 Thermal insulation

The suitability of the blocks in respect of thermal insulation is given in the relevant Detail Sheets.

### 11 Sound insulation

The suitability of the blocks in respect of sound insulation is given in the relevant Detail Sheets.

## 12 Properties in relation to fire



12.1 For walls constructed from the blocks and standard mortars and subject to the national Building Regulations, the fire resistance can be determined by reference to Building Research Establishment Report BR 128 (1988) *Guidelines for the construction of fire-resisting structural elements*.

12.2 The blocks are non-combustible as defined in the national Building Regulations:

#### England and Wales

Approved Document B, Appendix A, Table A6

#### Scotland

Technical Standards, Part D, Table 3 to (D1.3)

#### Northern Ireland

Technical Booklet E, Section 6, paragraph 6.4.

12.3 The wall ties and anchors must be non-combustible.

## 13 Rendering and plastering

As with all masonry, rendering should be carried out in accordance with BS 5262 : 1991 and plastering should be carried out in accordance with BS 5492 : 1990. Suitable mixes for use with the Toplite masonry may be determined by reference to the Certificate holder; account should be taken of the moisture condition of the masonry before finishes are applied. The Certificate holder should be consulted regarding low water vapour permeability renders.

## 14 Chasing

Chasing should be in accordance with BS 8000-3 : 2001 or BS 5628-3 : 2001. Vertical chases in the Toplite masonry should not exceed one-third of the thickness of the leaf, and horizontal chases should not exceed one-sixth of the thickness of the leaf at any point.

## 15 Pattern staining

15.1 Calculations carried out at the BBA indicate that the risk of pattern staining on the inside surface of a wall constructed with the blocks will be negligible under anticipated conditions of temperature and humidity, provided the plaster thickness is in accordance with BS 5492 : 1990, or that dry lining is used in accordance with the relevant recommendations of BS 8212 : 1995.

15.2 Where the blocks are to be used in solid external walls of rooms expected to have high humidities, the provision of ventilation should be in accordance with the Building Regulations and Standards.

## 16 Durability



Aircrete is a durable material. Walls will have a durability equivalent to that of traditional masonry.

## Installation

### 17 General

17.1 Installation of Toplite Aircrete Blocks should be carried out strictly in accordance with the provisions detailed in this Certificate. Technical advice should be sought from the Certificate holder.

17.2 The blocks are resistant to damage by site handling but should be used in accordance with BS 8000-3 : 2001 Section 4 *Materials handling and preparation* and Section 5 *Brick and/or block walling* or BS 5628-3 : 2001 Appendix A.

### 18 Fixings

18.1 Cut nails or proprietary nails may be used for lightweight fixtures. For heavier fixtures, screws and plugs, nailable expansion fixings or helical fixings should be used. A minimum of 50 mm penetration into the blocks should be achieved in all cases.

18.2 Fixings must be selected and installed in accordance with the fixings manufacturer's instructions, paying particular attention to drilling depth, drill diameter, minimum spacings and minimum edge distance.

18.3 Mean pull-out loads for certain proprietary fixings used with the blocks can be obtained from the Certificate holder. In each case a safety factor of 4 is recommended to establish a safe working load.

18.4 Guidance on some typical loads applied by relevant components (eg for services and finishing) can be obtained from BS 648 : 1964 and by common fixtures from Table 5 of BS 8200 : 1985.

### 19 Supervision and workmanship

The level of supervision during installation of the Toplite masonry and the associated structure, as with all masonry, must be sufficient to ensure the quality of workmanship described in BS 5628-3 : 2001 or BS 8000-3 : 2001.

## Additional Information

The management systems of Tarmac Topblock Ltd have been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2000 by the British Standards Institution Quality Assurance (Certificates Nos FM 00948). Toplite Standard, Toplite 7 and Toplite GTI are BSI Kitemarked products to BS 6073 (Licence Number KM 10370 for the Alfreton factory and KM 7522 for the Ford factory).

## Bibliography

BS 648 : 1964 *Schedule of weights of building materials*

BS 5250 : 1989(1995) *Code of practice for control of condensation in buildings*

BS 5262 : 1991 *Code of practice for external renderings*

BS 5492 : 1990 *Code of practice for internal plastering*

BS 5628 *Code of practice for use of masonry*  
BS 5628-1 : 1992 *Structural use of unreinforced masonry*

BS 5628-3 : 2001 *Materials and components, design and workmanship*

BS 6073 *Precast concrete masonry units*

BS 6073-1 : 1981 *Specification for precast concrete masonry units*

BS 6073-2 : 1981 *Method for specifying precast concrete masonry units*

BS 8000 *Workmanship on building sites*

BS 8000-3 : 2001 *Code of practice for masonry*

BS 8103 *Structural design of low-rise buildings*

BS 8103-2 : 1996 *Code of practice for masonry walls for housing*

BS 8104 : 1992 *Code of practice for assessing exposure of walls to wind-driven rain*

BS 8200 : 1985 *Code of practice for design of non-loadbearing external vertical enclosures of buildings*

BS 8212 : 1995 *Code of practice for dry lining and partitioning using gypsum plasterboard*

BS EN ISO 9001 : 2000 *Quality management systems. Requirements*

## Conditions of Certification

### 20 Conditions

20.1 This Certificate:

- (a) relates only to the product that is described, installed, used and maintained as set out in this Certificate;
- (b) is granted only to the company, firm or person identified on the front cover — no other company, firm or person may hold or claim any entitlement to this Certificate;
- (c) has to be read, considered and used as a whole document — it may be misleading and will be incomplete to be selective;
- (d) is copyright of the BBA.

20.2 References in this Certificate to any Act of Parliament, Regulation made thereunder, Directive or Regulation of the European Union, Statutory Instrument, Code of Practice, British Standard, manufacturers' instructions or similar publication, shall be construed as references to such publication in the form in which it was current at the date of this Certificate.

20.3 This Certificate will remain valid for an unlimited period provided that the product and the manufacture and/or fabricating process(es) thereof:

- (a) are maintained at or above the levels which have been assessed and found to be satisfactory by the BBA;

(b) continue to be checked by the BBA or its agents; and

(c) are reviewed by the BBA as and when it considers appropriate.

20.4 In granting this Certificate, the BBA makes no representation as to:

- (a) the presence or absence of any patent or similar rights subsisting in the product or any other product;
- (b) the right of the Certificate holder to market, supply, install or maintain the product; and
- (c) the nature of individual installations of the product, including methods and workmanship.

20.5 Any recommendations relating to the use or installation 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 restate the requirements of the Health & Safety at Work etc Act 1974, or of any other statutory, common law or other duty which may exist at the date of this Certificate or in the future; nor is conformity with such recommendations to be taken as satisfying the requirements of the 1974 Act or of any present or future statutory, common law or other duty of care. In granting this Certificate, the BBA does not accept responsibility to any person or body for any loss or damage, including personal injury, arising as a direct or indirect result of the installation and use of this product.



In the opinion of the British Board of Agrément, Toplite Aircrete Blocks are fit for their intended use provided they are installed, used and maintained as set out in this Certificate. Certificate No 02/3896 is accordingly awarded to Tarmac Topblock Ltd.

On behalf of the British Board of Agrément

Date of issue: 22nd March 2002

Chief Executive



Tarmac Topblock Ltd

Certificate No 02/3896

**DETAIL SHEET 2**

**TOPLITE AIRCRETE BLOCKS**

## Product

- THIS DETAIL SHEET LISTS THE BLOCKS COVERED BY THIS CERTIFICATE AND GIVES A RÉSUMÉ OF THE SPECIFICATION AND USES.
- Each product Detail Sheet gives fuller information on the specific block type or system, especially with regard to conditions/limitations of use.

This Detail Sheet must be read in conjunction with the Front Sheets and the relevant Detail Sheets.

Detail Sheet	Block type or system	ID stripe colour	Compressive strength (Nmm <sup>-2</sup> )	Thermal conductivity $\lambda$ (Wm <sup>-1</sup> K <sup>-1</sup> )	Nominal density (kgm <sup>-3</sup> )	Soil or groundwater DS class <sup>(1)</sup>	External wall		Separating (party) wall	Below dpc
							Solid	Cavity inner leaf		
3	Toplite Standard	None	3.5	0.15	630	1, 2, 3	✓	✓	✓	✓
3	Toplite Foundation	None	3.5	0.15	630	1, 2, 3	○	○	○	✓
4	Toplite 7	Black	7.0	0.19	730	1, 2, 3	✓	✓	✓	✓
4	Toplite Foundation	Black	7.0	0.19	730	1, 2, 3	○	○	○	✓
5	Toplite GTI	None	2.8	0.11	480	1, 2	✓	✓	X	✓/X <sup>(2)</sup>
			3.5	0.11	480	1, 2	✓	✓	X	✓/X <sup>(2)</sup>
6	Toplite Ultra GTI	None	2.8	0.10	440	1, 2	✓	✓	X	✓/X <sup>(2)</sup>

Key: ✓ = Recommended use. X = Not to be used. ○ = Use permissible.

(1) BRE Special Digest 1 *Concrete in aggressive ground Part 1* : 2001.

(2) Toplite GTI and Ultra GTI may be used in situations described in A1 and A2 but must not be used in situations described in A3 of Table 13 of BS 5628-3 : 2001 *Materials and components, design and workmanship* (ie high risk of saturation with freezing).



On behalf of the British Board of Agrément

Date of issue: 22nd March 2002

Chief Executive





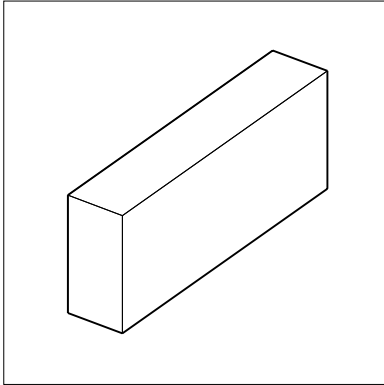
Tarmac Topblock Ltd

Certificate No 02/3896

**DETAIL SHEET 3**

**TOPLITE STANDARD**

## Product



• THIS DETAIL SHEET REPLACES CERTIFICATE No 97/3324 AND RELATES TO TOPLITE STANDARD, A GENERAL PURPOSE AIRCRETE BUILDING BLOCK WITH NOMINAL DENSITY  $630 \text{ kgm}^{-3}$  AND AN AVERAGE COMPRESSIVE STRENGTH OF  $3.5 \text{ Nmm}^{-2}$ .

• Toplite Foundation blocks are to the same specification as Toplite Standard blocks but are available in greater thicknesses.

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

## Technical Specification

### 1 Description

1.1 Toplite Standard are supplied with a face size of 440 mm by 215 mm and a range of thicknesses, with tolerances in accordance with BS 6073-1 : 1981. Other sizes of blocks, including coursing blocks, in the same material, are also available.

1.2 Toplite Foundation blocks are to the same specification but with thicknesses of 215 mm or greater.

1.3 The dry density and compressive strength of the blocks when tested in accordance with BS 6073-1 : 1981 are as detailed in Table 1.

Table 1 Block density and compressive strength

	Toplite Standard
Nominal dry density ( $\text{kgm}^{-3}$ )	$630 \pm 30$
Average compressive strength <sup>(1)</sup> ( $\text{Nmm}^{-2}$ )	$> 3.5^{(2)}$
Minimum individual block compressive strength ( $\text{Nmm}^{-2}$ )	2.8

(1) 10 blocks, saturated.

(2) also available, on request, at 4.0 and 4.2  $\text{Nmm}^{-2}$ .

## Design Data

### 2 General



Toplite Standard blocks are suitable for the construction of loadbearing and non-loadbearing solid internal and external walls, above and below the damp-proof course and for the inner and outer leaves of cavity walls.

### 3 Work below damp-proof course



3.1 The blocks are suitable for use in situations up to and including A3 as defined in Table 13 of BS 5628-3 : 2001.

3.2 In unusual soil and/or groundwater conditions, eg soils contaminated by industrial waste or highly acid soils, expert advice should be obtained.

3.3 Tests to MOAT No 12 : 1977 indicate that they are resistant to the freeze/thaw conditions likely to occur below the dpc.

3.4 Test data, site evidence and material properties examined by the BBA indicate that the blocks are suitable for use where classes DS1, DS2 and DS3 of soil or groundwater prevail as defined in Table 2 of BRE Special Digest 1 *Concrete in aggressive ground Part 1* : 2001.

## 4 Thermal insulation

4.1 The blocks have been tested in accordance with BS 874 : 1973(1980). For the purpose of calculating thermal transmittance (U values), the thermal conductivity ( $\lambda$  value) of the blocks should be taken as  $0.15 \text{ Wm}^{-1}\text{K}^{-1}$  for 'protected blockwork' (as defined in CIBSE Guide A : 1999 *Environmental design*).



4.2 The requirement for limiting the heat loss through the building fabric will be satisfied if the U values of the building elements, including thermal bridging, do not exceed the maximum values given in the Elemental Method of Approach in the national Building Regulations:

### **England and Wales**

Approved Document L

### **Scotland**

Technical Standards, Part J

### **Northern Ireland**

Technical Booklet F, Section 1.

4.3 Alternative solutions are also described in these documents which allow for more flexibility in design of U values for individual constructional elements.

## 5 Sound insulation



5.1 Separating walls constructed from the blocks and subject to the national Building Regulations should be constructed in accordance with the following provisions:

- (1) either two 100 mm thick leaves cavity construction or a solid 215 mm thick leaf
- (2) all vertical and horizontal joints shall be filled with mortar not exceeding the strength of 1:1:6
- (3) penetration by structural members, services, etc should be avoided; where such penetration is genuinely unavoidable, full sealing should be applied at the construction stage
- (4) where joists are at right angles to the separating wall, joist hangers must be used
- (5) in cavity constructions, the cavity width shall be a minimum of 75 mm and should be maintained into the roof space
- (6) wall ties shall be of the butterfly type or an alternative proven not to increase the transmission of airborne sound in comparison. This may be determined by test evidence or by reference to an Agrément Certificate
- (7) electrical and TV sockets shall not be placed on the wall where avoidable, and never within a block length of each other on opposite sides of the wall
- (8) walls shall be finished with plaster, minimum thickness 13 mm or, in the case of the cavity wall

option, plasterboard on dabs. Finishes are not required in the roof space

(9) gas flues shall not be built into the separating wall where avoidable; where such construction is genuinely unavoidable, full sealing should be applied at the construction stage

(10) the use of lightweight ceiling boards, for example, foam-filled, shall be avoided

(11) the flanking construction shall comply with the following provisions:

(a) a leaf with a minimum thickness of 100 mm of Toplite Standard blocks or any blocks which give a greater or equivalent wall weight, or a leaf which meets condition 6 or 7 given in the *Sound insulation* section of Detail Sheets 5 or 6 of this Certificate.

(b) when the external wall has a cavity, the cavity should be stopped with a flexible closer

(c) the flanking leaf to be bonded to the separating wall or butted to it and tied at 300 mm maximum vertical spacing.

5.2 The flanking wall construction detailed in section 5.1(11) will meet the flanking requirements for the (deemed to satisfy) separating wall constructions of the national Building Regulations:

### **England and Wales**

Approved Document E

### **Scotland**

Technical Standards, Part H

### **Northern Ireland**

Technical Booklet G.

## 6 Concentrated loads

6.1 Increased local stresses may be permitted in the Toplite masonry provided the member applying the load is sensibly rigid and of appropriate bearing area, or a suitable spreader is introduced. Design should be in accordance with BS 5628-1 : 1992, clause 34.

6.2 Construction should be in accordance with BS 5628-3 : 2001; in particular, supervision and workmanship should ensure that coursing is carried out such that bearings are not less than 100 mm in length or the length required by the design calculation whichever is the greater. Lintels should not bear on short lengths of cut block. Where possible the masonry should be set out to provide a full block under a bearing. Pressed steel lintels should have a bearing of not less than 150 mm.

6.3 Joist hangers may be used<sup>(1)</sup> provided that:

(a) when designing in accordance with BS 5628-1 : 1992, the full effect of the maximum eccentric load at the joist hanger detail should be taken into account (see clause 31). In addition, since it should be assumed that joist hangers are

not sensibly rigid in terms of BS 5628-1 : 1992, clause 34, when calculating the local bearing stress under single hangers, the effective load applied via the hanger should be determined by an acceptable elastic theory

(b) they are compatible with blocks with compressive strengths of  $3.5 \text{ Nmm}^{-2}$ , or above, and the dimensions used in the design and manufactured from appropriate materials as set out in Tables 1 and 2 of BS 5628-3 : 2001

(c) supervision and workmanship are adequate to ensure that:

- installation is in accordance with the hanger manufacturer's instructions
- the Toplite course to carry the hangers is level and at the correct height, any adjustments being made before the course is laid
- the hanger bears directly on a complete block with the back plate flat against the block
- the gap between the joist and the back plate does not exceed 6 mm
- construction complies with the conditions used in the design, and restraint type hangers are used when specified
- the blockwork above the hanger is completed and matured before any load is applied to the hanger.

(1) Further guidance may be obtained from BRE Defect Action Sheet 58 : 1984 *Suspended timber floors : joist hangers in masonry walls — installation.*

## 7 Movement

7.1 The drying shrinkage of the products, as defined in BS 6073-1 : 1981, may be taken as not more than 0.09%. Movement joints should be designed in accordance with BS 5628-3 : 2001.

7.2 In standard construction, mortars should not be stronger than the blocks; mortar designation (iii) or weaker, as detailed in BS 5628-3 : 2001, should be used.

7.3 When bed joint reinforcement is designed to contribute to accommodation of movement in association with appropriate movement joints, blockwork should be designed and installed strictly in accordance with the Certificate holder's instructions.

The following is a summary of the technical investigations carried out on Toplite Standard blocks.

## 8 Tests

Tests were carried out as part of the assessment resulting in the issue of the original Certificate No 90/2416 and later Certificates:

*to BS 6073-1 and BS 6073-2 : 1981*

dimensional accuracy

dry density

compressive strength

*to BS 874-2 : Section 2.1 : 1986*

thermal conductivity

*to MOAT No 12 : 1977*

assessment of freeze/thaw resistance

*comparative tests*

natural exposure.

## 9 Other investigations

9.1 A re-examination was made of the data on which the previous Certificates were based. The conclusions drawn from the original data remain valid and are supported by the additional data obtained from continued testing.

9.2 Regular factory inspections have been carried out to ensure that quality is being maintained.

9.3 The BBA has not received any report of failure of the products in service.

# Electronic Copy

## Bibliography

BS 874 : 1973(1980) *Methods for determining thermal insulating properties with definitions of thermal insulating terms*

BS 5628 *Code of practice for use of masonry*  
BS 5628-1 : 1992 *Structural use of unreinforced masonry*

BS 5628-3 : 2001 *Materials and components, design and workmanship*

BS 6073 *Precast concrete masonry units*

BS 6073-1 : 1981 *Specification for precast concrete masonry units*

BS 6073-2 : 1981 *Method for specifying precast concrete masonry units*

MOAT No 12 : 1977 *The Assessment of Precast, Insulating Concrete Blocks for General Use in Building*



On behalf of the British Board of Agrément

Date of issue: 22nd March 2002

Chief Executive



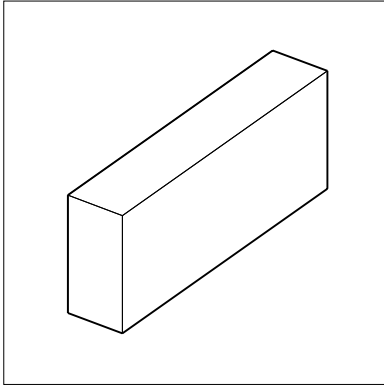
Tarmac Topblock Ltd

Certificate No 02/3896

**DETAIL SHEET 4**

**TOPLITE 7**

## Product



• THIS DETAIL SHEET REPLACES CERTIFICATE No 97/3324 AND RELATES TO TOPLITE 7, AN AIRCRETE BUILDING BLOCK WITH NOMINAL DENSITY  $730 \text{ kgm}^{-3}$ , AND AN AVERAGE COMPRESSIVE STRENGTH OF  $7.0 \text{ Nmm}^{-2}$ .

• Foundation blocks are available to the same specification as Toplite 7 blocks but are available in greater thicknesses.

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

## Technical Specification

### 1 Description

1.1 Toplite 7 blocks are supplied with a face size of 440 mm by 215 mm and a range of thicknesses, with tolerances in accordance with BS 6073-1 : 1981. Other sizes of blocks, including coursing blocks, in the same material, are also available.

1.2 Foundation blocks are available to the same specification but with thicknesses of 215 mm or greater.

1.3 The dry density and compressive strength of the blocks, when tested in accordance with BS 6073-1 and BS 6073-2 : 1981, are as detailed in Table 1.


Table 1 Block density and compressive strength

	Toplite 7
Nominal dry density ( $\text{kgm}^{-3}$ )	$730 \pm 50$
Average compressive strength <sup>(1)</sup> ( $\text{Nmm}^{-2}$ )	$> 7.0$
Minimum individual block compressive strength ( $\text{Nmm}^{-2}$ )	5.6


(1) 10 blocks, saturated.

## Design Data

### 2 General

 Toplite 7 blocks are suitable for the construction of loadbearing and non-loadbearing solid internal and external walls, above and below the damp-proof course and the inner and outer leaves of cavity walls.

### 3 Work below damp-proof course

 3.1 The blocks are suitable for use in situations up to and including A3 as defined in Table 13 of BS 5628-3 : 2001.

3.2 In unusual soil and/or groundwater conditions, eg soils contaminated by industrial waste or highly acid soils, expert advice should be obtained.

3.3 Tests to MOAT No 12 : 1977 indicate that they are resistant to the freeze/thaw conditions likely to occur below the dpc.

3.4 Test data, site evidence and material properties examined by the BBA indicate that the blocks are suitable for use where classes DS1, DS2 or DS3 of soil or groundwater prevail as defined in Table 2 of BRE Special Digest 1 *Concrete in aggressive ground*, Part 1 : 2001.

## 4 Thermal insulation

4.1 The blocks have been tested in accordance with BS 874 : 1973(1980). For the purpose of calculating thermal transmittance (U values), the thermal conductivity ( $\lambda$  value) of the blocks should be taken as  $0.19 \text{ Wm}^{-1}\text{K}^{-1}$  for 'protected blockwork' (as defined in CIBSE Guide A : 1999 *Environmental design*).



4.2 The requirement for limiting the heat loss through the building fabric will be satisfied if the U values of the building elements, including thermal bridging, do not exceed the maximum values given in the Elemental Method of Approach in the national Building Regulations:

### **England and Wales**

Approved Document L

### **Scotland**

Technical Standards, Part J

### **Northern Ireland**

Technical Booklet F, Section 1.

4.3 Alternative solutions are also described in these documents which allow for more flexibility in design of U values for individual constructional elements.

## 5 Sound insulation



5.1 Separating walls constructed from the blocks and subject to the national Building Regulations should be constructed in accordance with the provisions:

- (1) either two 100 mm thick leaves cavity construction or a solid 215 mm thick leaf
- (2) all vertical and horizontal joints shall be filled with mortar not exceeding the strength of 1:1:6
- (3) penetration by structural members, services, etc should be avoided; where such penetration is genuinely unavoidable, full sealing should be applied at the construction stage
- (4) where joists are at right angles to the separating wall, joist hangers must be used
- (5) in cavity constructions, the cavity width shall be a minimum of 75 mm and should be maintained into the roof space
- (6) wall ties shall be of the butterfly type or an alternative proven not to increase the transmission of airborne sound in comparison. This may be determined by test evidence or by reference to an Agrément Certificate
- (7) electrical and TV sockets shall not be placed on the wall where avoidable, and never within a block length of each other on opposite sides of the wall
- (8) walls shall be finished with plaster, minimum thickness 13 mm or, in the case of the cavity wall option, plasterboard on dabs. Finishes are not required in the roof space

(9) gas flues shall not be built into the separating wall where avoidable; where such construction is genuinely unavoidable, full sealing should be applied at the construction stage

(10) the use of lightweight ceiling boards, for example, foam-filled, shall be avoided

(11) the flanking construction shall comply with the following provisions:

(a) a leaf with a minimum thickness of 90 mm of Toplite 7 blocks or any blocks which give a greater or equivalent wall weight, or a leaf which meets condition 6 or 7 given in the *Sound insulation* section of Detail Sheets 5 or 6 of this Certificate

(b) when the external wall has a cavity, the cavity should be stopped with a flexible closer

(c) the flanking leaf to be bonded to the separating wall or butted to it and tied at 300 mm maximum vertical spacing.

5.2 The flanking wall construction detailed in section 5.1(11) will meet the flanking requirements for the (deemed to satisfy) separating wall constructions of the national Building Regulations:

### **England and Wales**

Approved Document E

### **Scotland**

Technical Standards, Part H

### **Northern Ireland**

Technical Booklet G.

## 6 Concentrated loads

6.1 Increased local stresses may be permitted in the Toplite masonry provided the member applying the load is sensibly rigid and of appropriate bearing area, or a suitable spreader is introduced. Design should be in accordance with BS 5628-1 : 1992, clause 34.

6.2 Construction should be in accordance with BS 5628-3 : 2001; in particular, supervision and workmanship should ensure that coursing is carried out such that bearings are not less than 100 mm in length or the length required by the design calculation whichever is the greater. Lintels should not bear on short lengths of cut block. Where possible the masonry should be set out to provide a full block under a bearing. Pressed steel lintels should have a bearing of not less than 150 mm.

6.3 Joist hangers may be used<sup>(1)</sup> provided that:

(a) when designing in accordance with BS 5628-1 : 1992, the full effect of the maximum eccentric load at the joist hanger detail should be taken into account (see clause 31). In addition, since it should be assumed that joist hangers are not sensibly rigid in terms of BS 5628-1 : 1992, clause 34, when calculating the local bearing stress under single hangers, the effective load

applied via the hanger should be determined by an acceptable elastic theory

(b) they are compatible with blocks with compressive strengths of  $7.0 \text{ Nmm}^{-2}$ , or above, and the dimensions used in the design and manufactured from appropriate materials as set out in Tables 1 and 2 of BS 5628-3 : 2001

(c) supervision and workmanship are adequate to ensure that:

- installation is in accordance with the hanger manufacturer's instructions
- the Toplite course to carry the hangers is level and at the correct height, any adjustments being made before the course is laid
- the hanger bears directly on a complete block with the back plate flat against the block.
- the gap between the joist and the back plate does not exceed 6 mm
- construction complies with the conditions used in the design, and restraint type hangers are used when specified
- the blockwork above the hanger is completed and matured before any load is applied to the hanger.

(1) Further guidance may be obtained from BRE Defect Action Sheet 58 : 1984 *Suspended timber floors : joist hangers in masonry walls — installation.*

## 7 Movement

7.1 The drying shrinkage of the products, as defined in BS 6073-1 : 1981, may be taken as not more than 0.09%. Movement joints should be designed in accordance with BS 5628-3 : 2001.

7.2 In standard construction, mortars should not be stronger than the blocks; mortar designation (iii) or weaker, as detailed in BS 5628-3 : 2001, should be used.

7.3 When bed joint reinforcement is designed to contribute to accommodation of movement in association with appropriate movement joints, blockwork should be designed and installed strictly in accordance with the manufacturer's instructions.

## Technical Investigations

The following is a summary of the technical investigations carried out on Toplite 7 blocks.

### 8 Test data

As part of the assessment resulting in the issue of Certificate No 97/3324, an examination was made of data for Toplite 7 relating to:

dimensional accuracy  
dry density  
compressive strength  
drying shrinkage  
thermal conductivity.

### 9 Other investigations

9.1 Regular factory inspections have been carried out to ensure that quality is being maintained.

9.2 The BBA has not received any reports of failure of the product in service.

## Bibliography

BS 874 : 1973(1980) *Methods for determining thermal insulating properties with definition of thermal insulating terms*

BS 5628 *Code of practice for use of masonry*  
BS 5628-1 : 1992 *Structural use of unreinforced masonry*

BS 5628-3 : 2001 *Materials and components, design and workmanship*

BS 6073 *Precast concrete masonry units*

BS 6073-1 : 1981 *Specification for precast concrete masonry units*

BS 6073-2 : 1981 *Method for specifying precast concrete masonry units*

MOAT No 12 : 1977 *The Assessment of Precast, Insulating Concrete Blocks for General Use in Building*



On behalf of the British Board of Agrément

Date of issue: 22nd March 2002

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

Chief Executive

# Electronic Copy







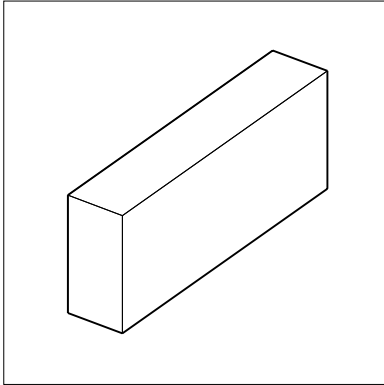
Tarmac Topblock Ltd

Certificate No 02/3896

**DETAIL SHEET 5**

**TOPLITE GTI**

## Product



• THIS DETAIL SHEET REPLACES CERTIFICATE No 97/3323 AND RELATES TO TOPLITE GTI, AN AIRCRETE BUILDING BLOCK WITH MAXIMUM DENSITY  $480 \text{ kgm}^{-3}$  AND AN AVERAGE COMPRESSIVE STRENGTH OF  $2.8 \text{ Nmm}^{-2}$ .

• Toplite GTI blocks are also available with a compressive strength of  $3.5 \text{ Nmm}^{-2}$ .

• The blocks are for use in the construction of internal and external walls above and below ground except that blocks must not be used in situations defined as A3 in Table 13 of BS 5628-3 : 2001 (ie high risk of saturation with freezing).

• The blocks must not be used in situations of high sulphate concentrations below damp-proof course level where sulphate-resisting cement would be necessary for the concrete footings.

• The blocks have not been assessed for use in sound-resisting separating walls.

*This Detail Sheet must be read in conjunction with the Front Sheets and relevant Detail Sheets, which give the product's position regarding the Building Regulations, general information relating to the product, and the Conditions of Certification.*

## Technical Specification

### 1 Description

1.1 Toplite GTI blocks have a workface size of 440 mm by 215 mm and are supplied in a range of thicknesses from 100 mm to 215 mm. Other sizes of blocks, including coursing blocks, in the same material are also available.

1.2 The dry density and compressive strength of the blocks, when tested in accordance with BS 6073-1 and BS 6073-2 : 1981, are as detailed in Table 1.


Table 1 Block density and compressive strength

	Toplite GTI	
Nominal dry density ( $\text{kgm}^{-3}$ )	$460 \pm 20$	$460 \pm 20$
Average compressive strength <sup>(1)</sup> ( $\text{Nmm}^{-2}$ )	> 2.8	> 3.5
Minimum individual block compressive strength ( $\text{Nmm}^{-2}$ )	2.24	2.8


(1) 10 blocks, saturated.

## Design Data

### 2 General

 Toplite GTI blocks are suitable for the construction of loadbearing and non-loadbearing solid internal and external walls, above and below the damp-proof course (except for certain situations specified in section 3 of this Detail Sheet) and the inner and outer leaves of cavity walls.

### 3 Work below damp-proof course

 3.1 The blocks are suitable for use in situations up to and including A2 as defined in Table 13 of BS 5268-3 : 2001 (ie where there is no risk of saturation with freezing). These blocks have not been assessed for use under A3 conditions.

3.2 Test data, site evidence and material properties examined by the BBA indicate that Toplite GTI blocks are suitable for use where classes DS1 or DS2 of soil or groundwater prevail as defined in Table 2 of BRE Special Digest 1 *Concrete in aggressive ground*, Part 1 : 2001.

3.3 In unusual soil water and/or groundwater conditions, eg soils contaminated by industrial waste or highly acid soils, expert advice should be obtained.

## 4 Thermal insulation

4.1 The blocks have been tested in accordance with BS 874 : 1973(1980). For the purposes of calculating thermal transmittance (U values), the thermal conductivity ( $\lambda$  value) of the blocks should be taken as  $0.11 \text{ Wm}^{-1}\text{K}^{-1}$  for 'protected' blockwork (as defined in CIBSE Guide A : 1999 *Environmental design*).



4.2 The requirement for limiting the heat loss through the building fabric will be satisfied if the U values of the building elements, including thermal bridging, do not exceed the maximum values given in the Elemental Method of Approach in the national Building Regulations:

### England and Wales

Approved Document L

### Scotland

Technical Standards, Part J

### Northern Ireland

Technical Booklet F, Section 1.

4.3 Alternative solutions are also described in these documents which allow for more flexibility in design of U values for individual constructional elements.

## 5 Sound insulation



Where the block is used in a solid external wall or the inner leaf of an external cavity wall subject to the national Building Regulations, and the external wall flanks a separating wall, it should comply with the construction conditions given in Table 1.

Table 1 External wall requirements

Separating wall type <sup>(1)</sup>	External wall requirements to appropriate Building Regulations		
	England and Wales	Scotland <sup>(2)</sup>	Northern Ireland
<b>Wall Type 1:</b> Solid Masonry <sup>(3)</sup>	Condition 1	Condition 1	Condition 1
	Condition 2	Condition 2	Condition 2
	Condition 3		Condition 4
			Condition 5
<b>Wall Type 2:</b> Cavity Masonry Construction B <sup>(3)</sup>	Condition 1	Condition 1	Condition 1
	Condition 3		Condition 4
			Condition 5
<b>Wall Type 2:</b> Cavity Masonry Construction C <sup>(3)</sup>	Condition 1		
	Condition 3		
	Condition 6		
Walls built of blocks the subject of current Agrément Certificate <sup>(3)</sup>	Condition 6		Condition 6
	or Condition 7		or Condition 7

(1) Separating wall type as defined in the Building Regulations: **England and Wales** — Approved Document E, **Scotland** — Standard H2.1, **Northern Ireland** — Technical Booklet G.

(2) The Certificate holder holds details of other constructions which have passed field tests indicating compliance with the performance standard specified in point 18 of the Technical Standards, Part H *Provisions deemed to satisfy the Standards*.

(3) Where the separating wall is neither of Wall Type 1 : Solid Masonry or Wall Type 2 Cavity Masonry, Construction B or C, the blocks may be used in repeating an existing acceptable construction in accordance with the provisions of Section 3 of Approved Document E in **England and Wales**, or Section 2 of Technical Booklet G in **Northern Ireland**. The Certificate holder should be consulted for independent field test reports supporting this alternative.

**Condition 1.** The external wall should be bonded to the separating wall or be butted to it and tied at a maximum 300 mm vertical spacing.

**Condition 2.** The external wall should have openings on both sides of the separating wall at every storey, which are at least one metre high and not more than 700 mm from the face of the separating wall.

**Condition 3.** If the external wall is a cavity wall, the cavity should be stopped with a flexible closer.

**Condition 4.** The external wall should have at least 650 mm between openings on either side of the separating wall.

**Condition 5.** The inner leaf of the external wall should not extend past the end of the separating wall.

**Condition 6.** A minimum leaf thickness of 100 mm of Toplite GTI is required, finished with either plaster or plasterboard on dabs.

**Condition 7.** Any requirements for the flanking construction included within Detail Sheets 3 and 4 will be met by a flanking wall of Toplite GTI which provides an equivalent wall weight.

## 6 Concentrated loads

6.1 Increased local stresses may be permitted in the Toplite masonry provided the member applying the load is sensibly rigid and of appropriate bearing area, or a suitable spreader is introduced. Design should be in accordance with BS 5628-1 : 1992, clause 34.

6.2 Construction should be in accordance with BS 5628-3 : 2001; in particular, supervision and workmanship should ensure that coursing is carried out such that bearings are not less than 100 mm in length or the length required by the design calculation whichever is the greater. Lintels should not bear on short lengths of cut block. Where possible the masonry should be set out to provide a full block under a bearing. Pressed steel lintels should have a bearing of not less than 150 mm.

6.3 Joist hangers may be used<sup>(1)</sup> provided that:

(a) when designing in accordance with BS 5628-1 : 1992, the full effect of the maximum eccentric load at the joist hanger detail should be taken into account (see clause 31). In addition, since it should be assumed that joist hangers are not sensibly rigid in terms of BS 5628-1 : 1992, clause 34, when calculating the local bearing stress under single hangers, the effective load applied via the hanger should be determined by an acceptable elastic theory.

(b) they are compatible with blocks with compressive strengths of  $2.8 \text{ Nmm}^{-2}$ , or above, and the dimensions used in the design and manufactured from appropriate materials as set out in Tables 1 and 2 of BS 5628-3 : 2001.

(c) supervision and workmanship are adequate to ensure that:

- installation is in accordance with the hanger manufacturer's instructions
- the Toplite course to carry the hangers is level and at the correct height, any adjustments being made before the course is laid
- the hanger bears directly on a complete block with the back plate flat against the block
- the gap between the joist and the back plate does not exceed 6 mm
- construction complies with the conditions used in the design, and restraint type hangers are used when specified
- the blockwork above the hanger is completed and matured before any load is applied to the hanger.

(1) Further guidance may be obtained from BRE Defect Action Sheet 58 : 1984 *Suspended timber floors : joist hangers in masonry walls — installation.*

## 7 Movement

7.1 The drying shrinkage of the product, as defined in BS 6073-1 : 1981, may be taken as not more than 0.09%. Movement joints should be designed in accordance with BS 5628-3 : 2001.

7.2 Mortars should not be stronger than the blocks; using the definitions in Tables 13 and 14 of BS 5628-3 : 2001, mortar designation (iii) or (iv) should be used in A1 conditions, while mortar designation (iii) may be used in A2 conditions.

7.3 When bed joint reinforcement is designed to contribute towards accommodation of movement in association with appropriate movement joints, blockwork should be designed and installed strictly in accordance with the Certificate holder's instructions.

## Technical Investigations

The following is a summary of the technical investigations carried out on Toplite GTI.

## 8 Tests

Tests were carried out as part of the assessment resulting in the issue of the original Certificate No 87/1949 and later Certificates:

*to BS 6073-1 and BS 6073-2 : 1981*  
dimensional accuracy  
dry density  
compressive strength  
drying shrinkage.

## 9 Other investigations

9.1 A re-examination was made of the data on which the previous Certificate was based. The conclusions drawn from the original data remain valid and are supported by the additional data obtained from continued testing.

9.2 Regular factory inspections have been carried out to ensure that quality is being maintained.

9.3 The BBA has not received any reports of failure of the product in service.

## Bibliography

BS 874 : 1973(1980) *Methods for determining thermal insulating properties with definitions of thermal insulating terms*

BS 5628 *Code of practice for use of masonry*  
BS 5628-1 : 1992 *Structural use of unreinforced masonry*

BS 5628-3 : 2001 *Materials and components, design and workmanship*

BS 6073 *Precast concrete masonry units*

BS 6073-1 : 1981 *Specification for precast concrete masonry units*

BS 6073-2 : 1981 *Method for specifying precast concrete masonry units*



On behalf of the British Board of Agrément

Date of issue: 22nd March 2002

*P. C. NEWTON*  
Chief Executive

# Electronic Copy





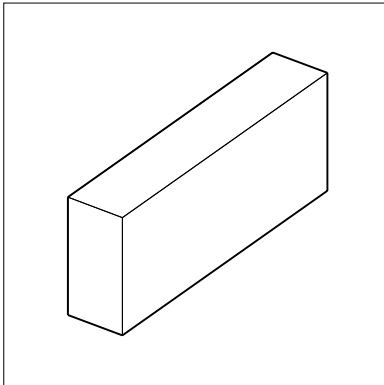
Tarmac Topblock Ltd

Certificate No 02/3896

**DETAIL SHEET 6**

**TOPLITE ULTRA GTI**

## Product



• THIS DETAIL SHEET REPLACES CERTIFICATE No 97/3323 AND RELATES TO TOPLITE ULTRA GTI, AN AIRCRETE BUILDING BLOCK WITH MAXIMUM DENSITY  $440 \text{ kgm}^{-3}$  AND AN AVERAGE COMPRESSIVE STRENGTH OF  $2.8 \text{ Nmm}^{-2}$ .

• The blocks are for use in the construction of internal and external walls above and below ground except that blocks must not be used in situations defined as A3 in Table 13 of BS 5628-3 : 2001 (ie high risk of saturation with freezing).

• The blocks must not be used in situations of high sulphate concentrations below damp-proof course level where sulphate-resisting cement would be necessary for the concrete footings.

• The blocks have not been assessed for use in sound-resisting separating walls.

*This Detail Sheet must be read in conjunction with the Front Sheets and relevant Detail Sheets, which give the product's position regarding the Building Regulations, general information relating to the product, and the Conditions of Certification.*

## Technical Specification

### 1 Description

1.1 Toplite Ultra GTI blocks have a workface size of 440 mm by 215 mm and are supplied in a range of thicknesses from 100 mm to 215 mm. Other sizes of blocks, including coursing blocks, in the same material are also available.

1.2 The dry density and compressive strength of the blocks, when tested in accordance with BS 6073-1 and BS 6073-2 : 1981, are as detailed in Table 1.


Table 1 Block density and compressive strength

	Toplite Ultra GTI
Nominal dry density ( $\text{kgm}^{-3}$ )	$420 \pm 20$
Average compressive strength <sup>(1)</sup> ( $\text{Nmm}^{-2}$ )	> 2.8
Minimum individual block compressive strength ( $\text{Nmm}^{-2}$ )	2.24


(1) 10 blocks, saturated.

## Design Data

### 2 General

 Toplite Ultra GTI blocks are suitable for the construction of loadbearing and non-loadbearing solid internal and external walls, above and below the damp-proof course (except for certain situations specified in section 3 of this Detail Sheet) and the inner and outer leaves of cavity walls.

### 3 Work below damp-proof course

 3.1 The blocks are suitable for use in situations up to and including A2 as defined in Table 13 of BS 5268-3 : 2001 (ie where there is no risk of saturation with freezing). These blocks have not been assessed for use under A3 conditions.

3.2 Test data, site evidence and material properties examined by the BBA indicate that Toplite Ultra GTI blocks are suitable for use where classes DS1 or DS2 of soil or groundwater prevail as defined in Table 2 of BRE Special Digest 1 *Concrete in aggressive ground*, Part 1 : 2001.

3.3 In unusual soil water and/or groundwater conditions, eg soils contaminated by industrial waste or highly acid soils, expert advice should be obtained.

## 4 Thermal insulation

4.1 The blocks have been tested in accordance with BS 874 : 1973(1980). For the purposes of calculating thermal transmittance (U values), the thermal conductivity ( $\lambda$  value) of the blocks should be taken as  $0.10 \text{ Wm}^{-1}\text{K}^{-1}$  for 'protected' blockwork (as defined in CIBSE Guide A : 1999 *Environmental design*).



4.2 The requirement for limiting the heat loss through the building fabric will be satisfied if the U values of the building elements, including thermal bridging, do not exceed the maximum values given in the Elemental Method of Approach in the national Building Regulations:

### England and Wales

Approved Document L

### Scotland

Technical Standards, Part J

### Northern Ireland

Technical Booklet F, Section 1.

4.3 Alternative solutions are also described in these documents which allow for more flexibility in design of U values for individual constructional elements.

## 5 Sound insulation



Where the block is used in a solid external wall or the inner leaf of an external cavity wall subject to the national Building Regulations, and the external wall flanks a separating wall, it should comply with the construction conditions given in Table 1.

Table 1 External wall requirements

Separating wall type <sup>(1)</sup>	External wall requirements to appropriate Building Regulations		
	England and Wales	Scotland <sup>(2)</sup>	Northern Ireland
<b>Wall Type 1:</b> Solid Masonry <sup>(3)</sup>	Condition 1	Condition 1	Condition 1
	Condition 2	Condition 2	Condition 2
	Condition 3		Condition 4 Condition 5
<b>Wall Type 2:</b> Cavity Masonry Construction B <sup>(3)</sup>	Condition 1	Condition 1	Condition 1
	Condition 3		Condition 4 Condition 5
<b>Wall Type 2:</b> Cavity Masonry Construction C <sup>(3)</sup>	Condition 1		
	Condition 3 Condition 6		
Walls built of blocks the subject of current Agrément Certificate <sup>(3)</sup>	Condition 6		Condition 6
	or Condition 7		or Condition 7

(1) Separating wall type as defined in the Building Regulations: **England and Wales** — Approved Document E, **Scotland** — Standard H2.1, **Northern Ireland** — Technical Booklet G.

(2) The Certificate holder holds details of other constructions which have passed field tests indicating compliance with the performance standard specified in point 18 of the Technical Standards, Part H *Provisions deemed to satisfy the Standards*.

(3) Where the separating wall is neither of Wall Type 1 : Solid Masonry or Wall Type 2 Cavity Masonry, Construction B or C, the blocks may be used in repeating an existing acceptable construction in accordance with the provisions of Section 3 of Approved Document E in **England and Wales**, or Section 2 of Technical Booklet G in **Northern Ireland**. The Certificate holder should be consulted for independent field test reports supporting this alternative.

**Condition 1.** The external wall should be bonded to the separating wall or be butted to it and tied at a maximum 300 mm vertical spacing.

**Condition 2.** The external wall should have openings on both sides of the separating wall at every storey, which are at least one metre high and not more than 700 mm from the face of the separating wall.

**Condition 3.** If the external wall is a cavity wall, the cavity should be stopped with a flexible closer.

**Condition 4.** The external wall should have at least 650 mm between openings on either side of the separating wall.

**Condition 5.** The inner leaf of the external wall should not extend past the end of the separating wall.

**Condition 6.** A minimum leaf thickness of 115 mm of Toplite Ultra GTI is required, finished with either plaster or plasterboard on dabs.

**Condition 7.** Any requirements for the flanking construction included within Detail Sheets 3 and 4 will be met by a flanking wall of Toplite Ultra GTI which provides an equivalent wall weight.

## 6 Concentrated loads

6.1 Increased local stresses may be permitted in the Toplite Ultra GTI masonry provided the member applying the load is sensibly rigid and of appropriate bearing area, or a suitable spreader is introduced. Design should be in accordance with BS 5628-1 : 1992, clause 34.

6.2 Construction should be in accordance with BS 5628-3 : 2001; in particular, supervision and workmanship should ensure that coursing is carried out such that bearings are not less than 100 mm in length or the length required by the design calculation whichever is the greater. Lintels should not bear on short lengths of cut block. Where possible the masonry should be set out to provide a full block under a bearing. Pressed steel lintels should have a bearing of not less than 150 mm.

6.3 Joist hangers may be used<sup>(1)</sup> provided that:

(a) when designing in accordance with BS 5628-1 : 1992, the full effect of the maximum eccentric load at the joist hanger detail should be taken into account (see clause 31). In addition, since it should be assumed that joist hangers are not sensibly rigid in terms of BS 5628-1 : 1992, clause 34, when calculating the local bearing stress under single hangers, the effective load applied via the hanger should be determined by an acceptable elastic theory.

(b) they are compatible with blocks with compressive strengths of  $2.8 \text{ Nmm}^{-2}$ , or above, and the dimensions used in the design and manufactured from appropriate materials as set out in Tables 1 and 2 of BS 5628-3 : 2001.

(c) supervision and workmanship are adequate to ensure that:

- installation is in accordance with the hanger manufacturer's instructions
- the Toplite course to carry the hangers is level and at the correct height, any adjustments being made before the course is laid
- the hanger bears directly on a complete block with the back plate flat against the block
- the gap between the joist and the back plate does not exceed 6 mm
- construction complies with the conditions used in the design, and restraint type hangers are used when specified
- the blockwork above the hanger is completed and matured before any load is applied to the hanger.

(1) Further guidance may be obtained from BRE Defect Action Sheet 58 : 1984 *Suspended timber floors : joist hangers in masonry walls — installation.*

## 7 Movement

7.1 The drying shrinkage of the product, as defined in BS 6073-1 : 1981, may be taken as not more than 0.09%. Movement joints should be designed in accordance with BS 5628-3 : 2001.

7.2 Mortars should not be stronger than the blocks; using the definitions in Tables 13 and 14 of BS 5628-3 : 2001, mortar designation (iii) or (iv) should be used in A1 conditions, while mortar designation (iii) may be used in A2 conditions.

7.3 When bed joint reinforcement is designed to contribute towards accommodation of movement in association with appropriate movement joints, blockwork should be designed and installed strictly in accordance with the Certificate holder's instructions.

## Technical Investigations

The following is a summary of the technical investigations carried out on Toplite Ultra GTI.

## 8 Test data

As part of the assessment resulting in the issue of Certificate No 97/3323, an examination was made of data for Toplite Ultra GTI relating to:

- dimensional accuracy
- dry density
- compressive strength
- drying shrinkage
- thermal conductivity.

## 9 Other investigations

9.1 A re-examination was made of the data on which the previous Certificate was based. The conclusions drawn from the original data remain valid and are supported by the additional data obtained from continued testing.

9.2 Regular factory inspections have been carried out to ensure that quality is being maintained.

9.3 The BBA has not received any reports of failure of the product in service.

## Bibliography

BS 874 : 1973(1980) *Methods for determining thermal insulating properties with definitions of thermal insulating terms*

BS 5628 *Code of practice for use of masonry*  
BS 5628-1 : 1992 *Structural use of unreinforced masonry*  
BS 5628-3 : 2001 *Materials and components, design and workmanship*

BS 6073 *Precast concrete masonry units*  
BS 6073-1 : 1981 *Specification for precast concrete masonry units*  
BS 6073-2 : 1981 *Method for specifying precast concrete masonry units*



On behalf of the British Board of Agrément

Date of issue: 22nd March 2002

Chief Executive

# Electronic Copy

