



THOMAS ARMSTRONG

AIRTEC AERATED BLOCKS

PRODUCT RANGE



Contents

INTRODUCTION TO AIRTEC	Page 1
ENVIRONMENTAL	Page 2
WHY USE AIRTEC?	Page 3
THE AIRTEC PRODUCT RANGE	Page 4
PROPERTIES & APPLICATIONS	Page 5
AIRTEC PRODUCT DATASHEETS	
AIRTEC XL Wall Block	Page 6
AIRTEC STANDARD Wall Block	Page 7
AIRTEC PARTY WALL Block	Page 8
AIRTEC SEVEN Wall Block	Page 9
AIRTEC FOUNDATION 140 Block	Page 10
AIRTEC FOUNDATION 215 Block	Page 11
AIRTEC LARGE FORMAT – Wall Block	Page 12
AIRTEC LARGE FORMAT – Flooring Block	Page 13
AIRTEC BRICKETTES (Coursing Units)	Page 14
PERFORMANCE – Thermal	
Overview	Page 15
U Value Table – Partial Fill Cavity Wall	Page 18
U Value Table – Full Fill Cavity Wall	Page 19
PERFORMANCE – Acoustic	
Overview	Page 20
In Houses	Page 21
In Flats and Apartments	Page 22
PERFORMANCE – Fire Resistance	Page 23
WORKING WITH AIRTEC	
Workability, Cutting, Drilling, Chasing, Fixings	Page 24
Mortars, Renders and Plasters	Page 25
Painting, Tiling, Dry Lining, Cladding, Boarding	Page 27
DESIGN DETAILS	
Movement Control	Page 28
Wall Ties	Page 29
Lintels, Joist Hangers, Cavity Closing	Page 30
THIN-JOINT CONSTRUCTION	Page 31
SITE PRACTICE	Page 33
MATERIAL HEALTH & SAFETY DATA SHEET	Page 35

Disclaimer:

The information, guidance and technical details given here are made in good faith and whilst every effort is made to ensure that the information contained herein is accurate, we cannot accept liability for incidental or consequential loss or damage as a result of any errors or omissions. Regulations, Codes and the data used in U Value calculations were correct at the time of writing but are subject to continual change beyond our control. We offer a free technical advisory facility whose advice should always be sought for the use of Airtec products that are not specifically described herein. Thomas Armstrong (Concrete Blocks) Ltd reserves the right to modify or change product specification without prior notice in the interests of improving product and design criteria.

Introduction to AIRTEC

Thomas Armstrong's extensive range of high quality building products is now enhanced by the introduction of our new Airtec range of autoclaved aerated concrete (AAC) blocks.

Airtec products are designed to offer effective, practical solutions for the current Building Regulations using the very latest production methods in the UK's most technologically advanced AAC facility.

The high specification of the Airtec range and significant investment in choosing to use the very best materials and technology available demonstrates our ongoing commitment to quality and excellence in our products. With 175 years of manufacturing expertise, the company is now fully focused on offering our customers a whole new concept in standards of aircrete.

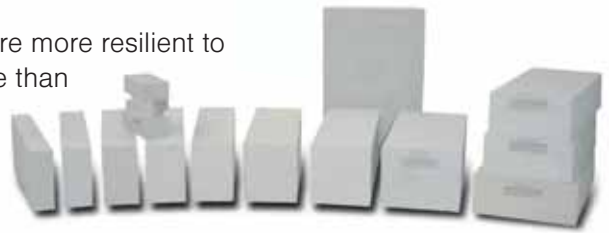


A UNIQUE PROCESS

The Airtec process is unlike any other in the UK. The Airtec manufacturing process allows for much greater control and consistency in quality than traditional aircrete technology, giving exceptional product characteristics.

QUALITY BLOCKS

Due to the advanced Airtec process, our blocks are more resilient to damage during handling and transportation to site than is typical for aerated blocks, offering significant reductions in wastage.



HIGH SPECIFICATION

Airtec blocks are manufactured to the very latest European Standard BS EN 771-4 which replaces the old British Standard BS 6073-1. This means that Airtec blocks not only meet the requirements of the current British Standards, but exceeds them in terms of specification and performance.

APPROVALS

- All Airtec Wall and Foundation blocks are BBA (British Board of Agrément) certified to the very latest technical standards; Certificate No. 06/4309.
- All Airtec production is Quality Assurance approved to BS EN ISO 9001:2000; Certificate No. 06/Q006.
- All Airtec products are approved for CE marking.



The result of this means strong, durable and dimensionally accurate blocks, suitable for traditional construction and thin-joint mortar construction. By selecting Airtec blocks, you are choosing a product that helps reduce the risk of changes to your wall design as further tightening of U-Value requirements are introduced.

Environmental



Airtec aerated blocks are among the most environmentally friendly building products available. Every part of the Airtec process is designed to minimise waste and maximise energy efficiency, from selection of raw materials, the energy-saving manufacturing technology right through to delivery. Here are some of the key reasons why Airtec blocks are among the 'greenest' available.....

RECYCLED RAW MATERIALS...

Three of the five raw materials used in the Airtec process are by-products from other manufacturing processes that would otherwise be sent to landfill.

The primary raw material in the Airtec process is Pulverized Fuel Ash (PFA). PFA is an unavoidable by-product of the coal-fired power generation process which is normally stockpiled in huge unsightly mounds or is discharged at sea. By using PFA in the Airtec process, we are making a significant contribution to the reduction of otherwise useless, non-degradable stockpiles.

NO PROCESS WASTE...

- All raw material brought into the process is completely used up – nothing is wasted.
- During production all material not used immediately is continuously recycled.
- Any damaged blocks that cannot be recycled back into the process are re-used within our aggregate block plants.
- Due to the advanced energy efficiency techniques used, all of the excess energy in the form of superheated steam from the curing process is captured and re-used.
- Unlike any other UK aircrete production facility, our factory does not wastefully vent to atmosphere the excess steam created during the curing process. We re-capture this valuable energy to be used again throughout the entire process.
- No steam escapes from our process, no water escapes from our process.
- Every bit of steam generated during the curing process is either transferred to be used for curing the next autoclave of blocks, or is condensed and used back in the process for making more mixes.
- The process generates no by-products.
- The Airtec process requires less steam for curing and pre-heating the curing vessels than the old process technology used throughout the UK.
- The very latest energy-efficient boiler technology is used to produce the steam for curing the product.
- No mains water at all is used in the Airtec process.
- Walls constructed from Airtec blocks can achieve 'A' ratings as defined in the BRE 'Green Guide to Housing Specification'.

LIGHTWEIGHT BLOCKS - EASIER TO TRANSPORT...

Millions of tiny air cells are generated within Airtec products during the manufacturing process resulting in blocks with an incredibly low weight. This in turn results in more packs per lorry load than conventional building blocks and therefore means less lorry journeys required, saving fuel and reducing exhaust emissions.

THERMALLY & ACOUSTICALLY EFFICIENT, FIRE RESISTANT BLOCKS...

Airtec blocks are extremely thermally efficient which greatly reduces the need for additional insulation products to achieve the required U-Values as set out in the Building Regulations. In fact, the thermal conductivity values of Airtec blocks are the best currently available in the UK.

In addition, the acoustic insulation and Class A1 fire protection achieved with Airtec constructions again means less additional materials needed to comply with the regulations.

Why Use AIRTEC?

THERMALLY EFFICIENT

Airtec blocks offer the best thermal values for any building block, which simplifies the task of meeting Part L Thermal Regulations. Standard cavity widths of 75mm can be built with either partial-fill or full-fill insulation to meet U-Values of 0.30W/m²K or better.

ACOUSTIC INSULATION

Airtec blocks are available in a variety of sizes and densities, offering a full range that meets the requirements of Part E acoustic regulations for Houses and Flats/Apartments. In addition, the Airtec range offers solutions to the latest Robust Standard Detail party wall designs.

SAVE TIME

A length of 620mm makes for faster laying of walls and foundations and speeds up overall build-time.

SAVE MONEY

Faster construction = lower costs. Light blocks allow for more blocks per load which means lower transportation costs to site. The exceptional thermal performance of Airtec reduces the amount of secondary cavity insulation required to meet U-Values.

SAVE MONEY ON FOUNDATIONS

Two courses of 140mm high Foundation blocks represents a 35% cost saving over two courses of 215mm blocks. In addition, coursing heights are easier to achieve as well as keeping the wider foundation blocks within the 20kg weight limit.

Lower foundation wall courses means further saving due to shallower trenches and less waste to deal with. We do offer 215mm Airtec Foundation blocks to maximise flexibility of design.

AIRTEC BLOCKS ARE ALSO.....

- Non-combustible and are ideal for Fire-Resistant walls
- Easy to cut, saw, chase, drill and shape
- Easy to use with fixings
- Surface-textured to promote superb adhesion of mortars and renders
- Rodent, insect and termite proof

SAFETY

Light blocks comply with manual handling guidelines. Hand-holds are included on all foundation blocks. Shallower foundation trenches mean safer trenches.

QUALITY

Resilience to handling damage during transportation means less waste and stoppage time for builders. The tightest possible dimensional tolerances are achieved on all products.

Superb surface finish of the block accepts paint finish, renders and plasters. Dimensionally highly accurate and Thin-Joint compatible. High quality packaging and wrapping is used to protect the blocks and maintain quality.

BS EN ISO 9001:2000 Quality Assurance approved; Certificate Number 06/Q006.

ENVIRONMENTALLY FRIENDLY

The most efficient recycling of energy is used in the Airtec process; no material goes to waste and steam is continually recycled to cure more Airtec rather than being vented to atmosphere. Light blocks allow for more blocks per load, less transportation and fuel needed.

MEETS REGULATIONS

The Airtec range offers solutions to structural codes and the Building Regulations:

- Part A: Structure
- Part E: Acoustic insulation
- Part L: Thermal Insulation
- Robust Detail Party Walls

BBA Approved; Certificate Number 06/4309.

CE-Mark compliant in accordance with BS EN 771-4.

MODERN METHOD OF CONSTRUCTION

Airtec blocks achieve the very tightest dimensional tolerances possible, 'Thin Layer Mortar category B' (TLMB).

This makes them ideal for use with Thin Joint mortar construction, a recognized Modern Method of Construction (MMC) whose many benefits will increase in relevance as future modifications to the Building Regulations demand even higher performance of construction products.

The AIRTEC Product Range

A full, comprehensive range of Airtec blocks are offered with various densities, thermal values and dimensions. There are blocks for walls, foundations, block and beam floors and coursing bricks.

All Airtec products are manufactured to the latest European standards, which by definition means that they exceed the old British standards in terms of performance and tolerance.



PLEASE REFER TO THE INDIVIDUAL PRODUCT DATASHEETS FOR MORE DETAILED INFORMATION.

WALL BLOCKS

Airtec wall blocks are manufactured to the traditional coursing height of 215mm and to a length of 620mm. They are offered in a range of thicknesses from 75mm to 215mm all with a dimensional accuracy suitable for both general purpose and thin-joint mortar construction. They are available in 4 strength-density grades:

2.9N/mm² (460kg/m³), 3.6 N/mm² (530 and 600kg/m³) and 7.3 N/mm² (730kg/m³).

FOUNDATION BLOCKS

Airtec Foundation blocks are designed for use below ground level to support cavity or solid walls. They are available as either 140mm or 215mm course height in widths of 260, 275, 300 and 350mm. (350mm width only available in the 140mm coursing height). All Foundation blocks are supplied with hand-holds to assist with safe and comfortable manual handling.

BRICKETTES (coursing units)

Airtec BRICKETTES are for use as coursing bricks in both load-bearing and non-load-bearing walls. They allow the builder to complete entire walls without the need to use a different material which could result in cold-bridging and movement problems associated with dissimilar materials in contact with one another.

LARGE-FORMAT BLOCKS – WALL & FLOORING

Airtec LARGE FORMAT BLOCKS are designed for use in block and beam flooring systems and as 'jumbo' size blocks for conventional and thin-joint walls.

In floors they maximise the speed of laying, minimise manual handling risks and achieve the best possible thermal insulation. The dimensions allow for a choice of two beam-spacing centre widths of 515mm (when laid 430mm wide) or 705mm (when laid 620mm wide). As wall blocks they allow speedy and efficient construction and minimise mortar joints thus increasing thermal efficiency, reducing U-Values and improving air-tightness.

Airtec LARGE FORMAT blocks can be easily cut, drilled and bored to accommodate services; they can accommodate under-floor heating systems and due to the inherent thermal insulation of Airtec minimises the amount of supplementary insulation needed to achieve the required thermal values.

They are available in the 3.6 N/mm² (600kg/m³) grade and at a thickness of 100mm.

Please note:

The strength grades under the new European standards as of April 2006 are 2.9N, 3.6N and 7.3N; these replace the previous British Standard categories of 2.8N, 4.0N and 7.0N.

AIRTEC Products – Properties & Applications

TECHNICAL SUMMARY TABLE

BLOCK TYPE	COMPRESSIVE STRENGTH (minimum)	DRY DENSITY (average)	DESIGN THERMAL CONDUCTIVITY
AIRTEC XL	2.9 N/mm ²	460 kg/m ³	0.09 W/mK
AIRTEC STANDARD	3.6 N/mm ²	530 kg/m ³	0.11 W/mK
AIRTEC PARTY WALL	3.6 N/mm ²	600 kg/m ³	0.13 W/mK
AIRTEC SEVEN	7.3 N/mm ²	730 kg/m ³	0.17 W/mK

Reaction to Fire:	Class A1
Drying Shrinkage (max):	0.4 mm/m (as defined in BS EN 771-4 : 2003. This replaces BS 6073-1)
Coefficient of Linear Expansion:	$8 \times 10^{-6} / K$
Vapour Resistivity:	50 MNsg ⁻¹ m ⁻¹
Dimensional Tolerance Category:	TLMB (Thin Layer Mortar category B)

APPLICATION SELECTION TABLE

BLOCK TYPE	Cavity Walls		Multi Storey	Partition Walls	Party Walls	Foundation Walls below dpc	Solid Walls	Block & Beam Floors
	Internal Leaf	External Leaf						
AIRTEC XL	✓	✓		✓		✓		
AIRTEC STANDARD	✓	✓	✓	✓		✓	✓	
AIRTEC PARTY WALL	✓	✓	✓	✓	✓	✓		✓
AIRTEC SEVEN	✓	✓	✓	✓	✓	✓	✓	✓
FOUNDATION 140 (3.6N & 7.3N)			✓			✓	✓	
FOUNDATION 215 (3.6N & 7.3N)			✓			✓	✓	
LARGE FORMAT (3.6N)	✓	✓	✓	✓				✓
BRICKETTES (All grades)	✓	✓	✓	✓				

Notes:

- Airtec Brickettes should never be used as the sole masonry building unit in load bearing walls.
- Airtec LARGE FORMAT BLOCKS when used in floors are not suitable for acoustic separating floors in apartments and flats.
- Airtec FOUNDATION 215 Blocks will exceed the recommended 20kg weight limit for a one-person manual handling operation. Therefore the builder must ensure that suitable handling precautions and techniques are employed.



AIRTEC XL Wall Block

AIRTEC XL 2.9N blocks have been designed to offer the very best thermal performance of the Airtec product range and as a cost-effective solution to the ever-increasingly stringent requirements of Part L of the Building Regulations.

This allows the builder to minimise the amount of secondary insulation required to meet thermal regulations as well as meeting the strength requirements of the very latest UK building codes.

An inner leaf of Airtec XL blocks gives the builder the option of using a 75mm cavity, either partially-filled or fully-filled whilst still achieving a U-Value of 0.30 W/m²K.



APPLICATIONS

- External Cavity or Solid walls
- Loadbearing & non-loadbearing walls
- Flanking walls to Party walls
- Partition Walls
- Foundation Walls below dpc
- Thin-Joint Construction
- Fire resistant walls

TECHNICAL PROPERTIES

Face Size:	620mm x 215mm
Compressive Strength (min):	2.9 N/mm ²
Dry Density (nominal):	460 kg/m ³
Design Thermal Conductivity:	0.09 W/mK
Fire Resistance Category:	Class A1
Dimensional Classification:	TLMB
Freeze/Thaw Resistant:	Yes



PACK WEIGHTS AND BLOCK SIZES

Block Thickness, mm	100	115	125	140
Block Weight, kg	6.3	7.3	7.9	8.8
No. Per Pack	56	48	48	40
Weight Per Pack, kg	433	426	464	433
m ² Per Pack	7.94	6.80	6.80	5.67
Blocks per m ²	7.05			

Please note:

- A range of wagon sizes are available, with or without pallets. Please ring our Sales Office for details.
- Other thicknesses available to order but are not kept as general stock sizes
- Block weight is at the equilibrium moisture content of 3% by weight
- Pack weight allows for maximum moisture content when packed; actual delivered weight will be less
- m² per pack figure based on the inclusion of conventional 10mm mortar joints
- Health & Safety guidelines recommend that precautions be taken when using blocks over 20kg in weight

AIRTEC STANDARD Wall Block



AIRTEC STANDARD 3.6N blocks have been designed to offer the superior thermal performance of Airtec blocks along with the structural capacity for up to 3 storey construction.

In fact Airtec Standard blocks offer the same thermal conductivity value of a typical 2.9N strength aerated block. This gives a combination of medium strength and high thermal performance in one block, offering flexible design for single storey and multi-storey build.

This product is exceptionally low weight for an aerated block of this size and in this strength category.



APPLICATIONS

- **External Cavity or Solid walls**
- **Loadbearing and non-loadbearing walls**
- **Flanking walls to Party walls**
- **Partition Walls**
- **Foundation Walls below dpc**
- **Thin-Joint Construction**
- **Fire resistant walls**

TECHNICAL PROPERTIES

Face Size:	620mm x 215mm
Compressive Strength (min):	3.6 N/mm ²
Dry Density (nominal):	530 kg/m ³
Design Thermal Conductivity:	0.11 W/mK
Fire Resistance Category:	Class A1
Dimensional Classification:	TLMB
Freeze/Thaw Resistant:	Yes

PACK WEIGHTS AND BLOCK SIZES

Block Thickness, mm	75	100	115	125	140	190	215
Block Weight, kg	5.5	7.3	8.4	9.1	10.2	13.8	15.6
No. Per Pack	72	56	48	48	40	32	28
Weight Per Pack, kg	481	498	491	534	498	541	536
m ² Per Pack	10.21	7.94	6.80	6.80	5.67	4.54	3.97
Blocks per m ²	7.05						

Please note:

- A range of wagon sizes are available, with or without pallets. Please ring our Sales Office for details.
- Other thicknesses available to order but are not kept as general stock sizes
- Block weight is at the equilibrium moisture content of 3% by weight
- Pack weight allows for maximum moisture content when packed; actual delivered weight will be less
- m² per pack figure based on the inclusion of conventional 10mm mortar joints
- Health & Safety guidelines recommend that precautions be taken when using blocks over 20kg in weight



AIRTEC PARTY WALL Block

AIRTEC PARTY WALL 3.6N blocks have been designed to offer both the superior thermal performance of Airtec blocks along with a specification suitable for acoustic party/separating walls.

Airtec Party Wall blocks can be used in Robust Detail party wall constructions between dwellings and when building in accordance with Part E of the Building Regulations.



APPLICATIONS

- **Party/Separating Walls to Part E**
- **Robust Standard Detail Party Walls**
- **Flanking walls to Party walls**
- **Thin-Joint Construction**
- **Fire resistant walls**

TECHNICAL PROPERTIES

Face Size:	620mm x 215mm
Compressive Strength (min):	3.6 N/mm ²
Dry Density (nominal):	600 kg/m ³
Design Thermal Conductivity:	0.13 W/mK
Fire Resistance Category:	Class A1
Dimensional Classification:	TLMB
Freeze/Thaw Resistant:	Yes



PACK WEIGHTS AND BLOCK SIZES

Block Thickness, mm	100
Block Weight, kg	8.2
No. Per Pack	56
Weight Per Pack, kg	564
m² Per Pack	7.94
Blocks per m²	7.05

Please note:

- A range of wagon sizes are available, with or without pallets. Please ring our Sales Office for details.
- Block weight is at the equilibrium moisture content of 3% by weight
- Pack weight allows for maximum moisture content when packed; actual delivered weight will be less
- m² per pack figure based on the inclusion of conventional 10mm mortar joints

AIRTEC SEVEN Wall Block



AIRTEC SEVEN 7.3N blocks have been designed to offer the highest structural capacity of the Airtec range for construction up to 3 storeys in line with current Building Regulations and Structural Codes.

In addition, the low weight of these blocks and ease of handling offer the builder a quick, easy and cost-effective method of construction.

The builder also benefits from the superior thermal properties of Airtec products that allows for easier design to meet Part L requirements.



APPLICATIONS

- External Cavity or Solid walls
- Loadbearing and non-loadbearing walls
- Party / Separating Walls to Part E
- Robust Detail Party Walls
- Flanking walls to Party walls
- Partition Walls
- Foundation Walls below dpc
- Thin-Joint Construction
- Fire resistant walls

TECHNICAL PROPERTIES

Face Size:	620mm x 215mm
Compressive Strength (min):	7.3 N/mm ²
Dry Density (nominal):	730 kg/m ³
Design Thermal Conductivity:	0.17 W/mK
Fire Resistance Category:	Class A1
Dimensional Classification:	TLMB
Freeze/Thaw Resistant:	Yes

PACK WEIGHTS AND BLOCK SIZES

Block Thickness, mm	100	115	125	140	150	190	215
Block Weight, kg	10.0	11.5	12.5	14.0	15.0	19.0	21.5
No. Per Pack	56	48	48	40	36	32	28
Weight Per Pack, kg	686	676	736	686	662	746	738
m ² Per Pack	7.94	6.80	6.80	5.67	5.10	4.54	3.97
Blocks per m ²	7.05						

Please note:

- A range of wagon sizes are available, with or without pallets. Please ring our Sales Office for details.
- Other thicknesses available to order but are not kept as general stock sizes
- Block weight is at the equilibrium moisture content of 3% by weight
- Pack weight allows for maximum moisture content when packed; actual delivered weight will be less
- m² per pack figure based on the inclusion of conventional 10mm mortar joints
- Health & Safety guidelines recommend that precautions be taken when using blocks over 20kg in weight

AIRTEC FOUNDATION 140 Block



AIRTEC FOUNDATION blocks are designed as a lightweight, speedy and cost effective alternative to traditional cavity foundation walls.

A solid Airtec foundation wall of 140mm high blocks built two courses high means a faster build, shallower trenches, less waste material, no need for cavity wall ties, less mortar and eliminates any chance of collapsed cavities.

The excellent thermal properties of Airtec Foundation blocks enhance thermal integrity throughout the building especially when used in conjunction with Airtec walls and floors.

Hand-holds are provided for ease of handling, laying and additional safety.



APPLICATIONS

- **Solid Foundation Walls below dpc**
- **Thin-Joint Construction**
- **External Solid walls above dpc**
- **Support for cavity, solid and timber framed walls**
- **Support for block & beam suspended floors**

TECHNICAL PROPERTIES

Face Size:	620mm x 140mm
Compressive Strength (min):	3.6 or 7.3 N/mm ²
Dry Density (nominal):	530 or 730 kg/m ³
Design Thermal Conductivity:	0.11 or 0.17 W/mK
Fire Resistance Category:	Class A1
Dimensional Classification:	TLMB
Freeze/Thaw Resistant:	Yes



PACK WEIGHTS AND BLOCK SIZES

AIRTEC Grade	AIRTEC STANDARD 3.6N				AIRTEC SEVEN 7.3N			
Block Thickness, mm	260	275	300	350	260	275	300	350
Block Weight, kg	12.3	13.0	14.2	16.6	17.0	17.9	19.6	21.9
No. Per Pack	30	30	30	24	30	30	30	24
Weight Per Pack, kg	452	478	522	487	623	659	718	671
m ² Per Pack	2.84	2.84	2.84	2.27	2.84	2.84	2.84	2.27
Blocks per m ²	10.58							

Please note:

- A range of wagon sizes are available, with or without pallets. Please ring our Sales Office for details.
- Other thicknesses available to order but are not kept as general stock sizes
- Block weight is at the equilibrium moisture content of 3% by weight
- Pack weight allows for maximum moisture content when packed; actual delivered weight will be less
- m² per pack figure based on the inclusion of conventional 10mm mortar joints
- Health & Safety guidelines recommend that precautions be taken when using blocks over 20kg in weight

AIRTEC FOUNDATION 215 Block



AIRTEC FOUNDATION blocks are designed as a lightweight, speedy and cost effective alternative to traditional cavity foundation walls.

The 215mm height block is offered as an alternative to our 140mm high type for builders wishing to use conventional coursing height blocks.

The excellent thermal properties of Airtec Foundation blocks enhance thermal integrity throughout the building especially when used in conjunction with Airtec walls and floors.

Hand-holds are provided for improved ease of handling and safety.



APPLICATIONS

- **Solid Foundation Walls below dpc**
- **Thin-Joint Construction**
- **External Solid walls above dpc**
- **Support for cavity, solid and timber framed walls**
- **Support for block & beam suspended floors**

TECHNICAL PROPERTIES

Face Size:	620mm x 215mm
Compressive Strength (min):	3.6 or 7.3 N/mm ²
Dry Density (nominal):	530 or 730 kg/m ³
Design Thermal Conductivity:	0.11 or 0.17 W/mK
Fire Resistance Category:	Class A1
Dimensional Classification:	TLMB
Freeze/Thaw Resistant:	Yes



PACK WEIGHTS AND BLOCK SIZES

AIRTEC Grade	AIRTEC STANDARD 3.6N			AIRTEC SEVEN 7.3N		
Block Thickness, mm	260	275	300	260	275	300
Block Weight, kg	18.9	20.0	21.8	26.1	27.6	30.1
No. Per Pack	20	20	20	20	20	20
Weight Per Pack, kg	463	490	534	638	674	736
m ² Per Pack	2.84	2.84	2.84	2.84	2.84	2.84
Blocks per m ²	7.05					

Please note:

- A range of wagon sizes are available, with or without pallets. Please ring our Sales Office for details.
- Other thicknesses available to order but are not kept as general stock sizes
- Block weight is at the equilibrium moisture content of 3% by weight
- Pack weight allows for maximum moisture content when packed; actual delivered weight will be less
- m² per pack figure based on the inclusion of conventional 10mm mortar joints
- Health & Safety guidelines recommend that precautions be taken when using blocks over 20kg in weight

AIRTEC LARGE FORMAT - Wall Block



AIRTEC LARGE FORMAT Wall blocks are designed to provide significantly improved thermal insulation and air-tightness of internal and external walls by reducing the proportion of mortar joints in a wall. This effect is even greater when used in conjunction with 2mm thin-joint construction where the mortar proportion can be reduced by around 87% when compared to conventional walls using 10mm mortar joints.

These lightweight blocks can halve the amount of blocks to be laid in a wall as opposed to traditional 215mm high wall blocks.

Even though they are twice the height of a normal 215mm block, their very low weight complies with manual handling guidelines and minimises the amount of repetitive lifts required.



APPLICATIONS

- External or Internal leaf of cavity walls
- Loadbearing and non-loadbearing walls
- Party/Separating Walls to Part E
- Robust Details Party Walls
- Flanking walls to Party walls
- Partition Walls
- Thin-Joint Construction
- Fire resistant walls

TECHNICAL PROPERTIES

Face Size:	620mm x 430mm
Compressive Strength (min):	3.6 N/mm ²
Dry Density (nominal):	600 kg/m ³
Design Thermal Conductivity:	0.13 W/mK
Fire Resistance Category:	Class A1
Dimensional Classification:	TLMB
Freeze/Thaw Resistant:	Yes

PACK WEIGHTS AND BLOCK SIZES

Block Thickness, mm	100
Block Weight, kg	16.5
No. Per Pack	28
Weight Per Pack, kg	564
m ² Per Pack	7.47 †
Blocks per m ²	3.61



Please note:

- A range of wagon sizes are available, with or without pallets. Please ring our Sales Office for details.
- † The m² per pack DOES NOT include allowance for the mortar joint; this figure is for the block only
- Block weight is at the equilibrium moisture content of 3% by weight
- Pack weight allows for maximum moisture content when packed; actual delivered weight will be less

AIRTEC LARGE FORMAT - Flooring Block

AIRTEC LARGE FORMAT BLOCK when used as a Flooring Block is designed for use in block and beam floors to provide significantly improved thermal insulation of ground floors and quick, easy installation.

These lightweight blocks can be laid in either the 620mm width or the 430mm width, offering a choice of reinforced inverted T-beam centre spacings of 705mm and 515mm respectively.

An Airtec floor provides an excellent substrate for application of screed and floating floor finishes. They can be easily cut, bored and shaped where required for simple installation around services and are suitable for use with under-floor heating systems.



APPLICATIONS

- **Infill for Block and Beam flooring**
- **Fire resistant applications**

TECHNICAL PROPERTIES

Face Size:	620mm x 430mm
Compressive Strength (min):	> 3.6 N/mm ²
Transverse Strength (min):	> 3.5 kN
Design Thermal Conductivity:	0.13 W/mK
Fire Resistance Category:	Class A1
Dimensional Classification:	TLMB
Freeze/Thaw Resistant:	Yes

PACK WEIGHTS AND BLOCK SIZES

Block Thickness, mm	100
Block Weight, kg	16.5
No. Per Pack	28
Weight Per Pack, kg	564
m² Per Pack	7.47 †

Please note:

- A range of wagon sizes are available, with or without pallets. Please ring our Sales Office for details.
- † The m² per pack DOES NOT include the mortar / grout joint; this figure is for the block only
- Block weight is at the equilibrium moisture content of 3% by weight
- Pack weight allows for maximum moisture content when packed; actual delivered weight will be less





AIRTEC BRICKETTES (Coursing Units)

AIRTEC BRICKETTES are coursing units designed to offer brick-sized Airtec products for use as infill around doors and windows and can also be used for closing cavities around door and windows. They are available in all Airtec grades and:

- Eliminates the need for cutting down full-size blocks.
- Maintains material continuity throughout the entire wall thus avoiding the effects of cold-bridging and differential movement which can arise from the use of dissimilar materials
- Maintains uniform thermal performance throughout the entire wall
- Reduces pattern staining
- Reduces the need for expensive cavity closers



APPLICATIONS

- **Internal and External Leaf of Cavity Walls**
- **Loadbearing and non-loadbearing walls**
- **Partition walls**
- **Thin-joint construction**
- **Fire resistant walls**

TECHNICAL PROPERTIES

Face Size:	65mm x 215mm
Compressive Strength (min):	All Airtec grades
Dry Density (nominal):	All Airtec grades
Design Thermal Conductivity:	All Airtec grades
Fire Resistance Category:	Class A1
Dimensional Classification:	TLMB
Freeze/Thaw Resistant:	Yes

PACK WEIGHTS AND BLOCK SIZES

AIRTEC Grade	XL	Standard	Party Wall	Seven
Block Thickness, mm †	100	100	100	100
Block Weight, kg	0.66	0.78	0.88	1.05
No. Per Pack	520	520	520	520
Weight Per Pack, kg	421	485	550	668
m² Per Pack	8.78	8.78	8.78	8.78
Blocks per m²	59.26			

Please note:

- A range of wagon sizes are available, all packs on pallets. Please ring our Sales Office for details.
- † Other thicknesses are available and can be made to order
- Block weight is at the equilibrium moisture content of 3% by weight
- Pack weight allows for maximum moisture content when packed; actual delivered weight will be less



Performance - THERMAL

Part L of the Building Regulations (Conservation of Fuel and Power) has recently been updated. The aim is to improve the thermal efficiency of new dwellings by around 20% on previous Part L (2002) requirements.

The superior thermal properties of Airtec products offer simple, cost-effective solutions to help achieve thermal efficiency in buildings as outlined in Part L (2006).

The Airtec range offers the best thermal properties for this class of product currently available in the UK and therefore gives the builder the opportunity of meeting U-Value targets with the minimum of cost and effort.



PART L OF THE BUILDING REGULATIONS

The energy consumption used to heat buildings accounts for a significantly large proportion of all carbon dioxide produced annually – current estimates are between 40% and 50%. Clearly therefore, there is a real need to reduce the amount of energy used to heat a building. The best way to do this is to improve the thermal insulation of the fabric of the building. Part L of the Building Regulations (Conservation of Fuel and Power) requires that buildings achieve sufficient thermal efficiency as a means to reduce the need for extra heating and therefore counter the growth in greenhouse gas emissions.

As such, construction elements such as external walls, roofs and floors are set maximum U-Values so that the entire building achieves the required level of thermal efficiency. Thermally efficient building materials can offer the best solutions to achieve required U-Values.

WHAT ARE THE REQUIRED U-VALUES NOW? WHAT IS A SAP RATING?

Part L 1A(2006) for New Dwellings has moved away from simple prescribed U-Values for the various components of the building into the performance of the building as a whole. This involves an in-depth set of methods and calculations to determine the CO₂ Dwelling Emission Rate (DER) based on the actual fabric of the building in question. Factors such as windows, doors, boiler type, fuel, heating controls and lighting are taken into consideration in addition to the actual structural and insulation components.

The DER is then compared to the Target Emission Rate (TER); the TER being set by Building Regulations and is the maximum permissible emissions per dwelling per annum expressed in kg of CO₂.

If the DER is less than the TER, then the property complies.

SAP (Standard Assessment Procedure) is a calculation method whereby the DER and TER for the dwelling is produced and a SAP Rating given. This is used to give advice and guidance on how best to maximise efficiency. SAP 2005 is the latest version and is in line with Part L 2006 requirements.

To help the building achieve a lower DER, a set of guideline U-Values have been formulated for each component of the building. By meeting these U-Values, the chance of complying is greatly increased. These figures are shown opposite.

A NOTE ON AIR TIGHTNESS

The air permeability of a dwelling greatly affects the SAP rating; the lower the figure, the better DER rating is achieved.

SAP 2005 uses a default air permeability figure of (10m³/h.m²).

By conducting an actual pressure test on a dwelling for air leakage, the builder may improve the SAP rating of the construction by lowering the air permeability figure in the calculation.

Building Element	Part L 2006 Max allowed U-Values	SAP 2005 Guideline U-Values
Wall	0.35	0.30
Roof	0.25	0.16
Floor	0.25	0.22
Openings	2.20	1.80

Notes:

- The above table refers to new dwellings only.
- Extensions in existing dwellings must achieve 0.30 W/m²K to comply with Part L. A U-Value of 0.35 will not comply.
- It should be noted that the actual target U-Values in the new Part L 1A 2006 remain unchanged from Part L (2002) and if the builder achieves these, he will comply with Building Regulations for that particular component of the building. However, the likelihood will be that SAP 2005 will not be achieved.
- A further reduction in the guideline U-Value for walls to 0.27 is likely to occur in the next few years.

EXAMPLES OF CAVITY WALL SOLUTIONS TO ACHIEVE GUIDELINE U-VALUES

The following are examples of wall constructions to achieve a target U-Value of 0.30 W/m²K or better, using the latest calculation method in accordance with BS EN ISO 6946. U-Values are also shown for when Thin-Joint mortar joints are used. Remember, all Airtec products are Thin-Joint masonry compatible.

U-Values using equivalent grade aerated blocks from alternative manufacturers and also shown as a means of comparison.

Partially-Filled Airtec Cavity Walls to Achieve 0.30 W/m²K or better

- 50mm (min) clear cavity in all cases
- 12.5mm plasterboard on dabs in all cases
- 300mm (max) wall width, excluding finishes
- Brick outer leaf in all cases

AIRTEC INNER LEAF 100mm Block	CAVITY WALL INSULATION SLABS / BATTS	Wall Width (mm)	AIRTEC U-Value, W/m ² K		Typical equivalent aerated Block 100mm
			10mm Traditional Mortar	2mm Thin-Joint mortar	
XL 2.9N	25mm Alreflex Ultratherm	275	0.31	0.30	0.33
	35mm Kingspan TW50	285	0.29	0.27	0.30
	35mm Celotex or EcoTherm or Alreflex Platinum	285	0.30	0.29	0.32
	50mm Isowool Hi-Therm	300	0.30	0.28	0.31
STANDARD 3.6N	35mm Alreflex Ultratherm	285	0.29	0.28	0.30
	40mm Kingspan TW50	290	0.29	0.28	0.29
	40mm Celotex CW3000 or EcoTherm	290	0.30	0.30	0.31
	50mm Alreflex Platinum	300	0.28	0.27	0.29
SEVEN 7.3N	35mm Alreflex Ultratherm	285	0.30	0.30	0.31
	40mm Kingspan TW50	290	0.30	0.29	0.30
	50mm Celotex CW3000 or EcoTherm	300	0.28	0.27	0.28
	50mm Alreflex Platinum	300	0.29	0.29	0.30

Blue figures indicate where the guideline value of 0.30 or better is achieved

Red figures indicate where a value of 0.30 is exceeded

75mm Partially-Filled Airtec Cavity Walls to Meet a Maximum of 0.35 W/m²K

U-Values up to 0.35W/m²K are still permissible in Part L of the Building Regulations. This offers the designer and builder the opportunity to still use 75mm cavity walls and therefore avoid costly re-designs. However, in order to achieve an acceptable SAP rating, improvements in the thermal values of other construction elements such as the roofs, floors or heating systems may have to be made to compensate. The table below shows some examples of 75mm cavity Airtec walls.

- 50mm (min) clear cavity in all cases
- 12.5mm plasterboard on dabs in all cases
- 300mm (max) wall width, excluding finishes
- Brick outer leaf in all cases

AIRTEC INNER LEAF 100mm Block	CAVITY WALL INSULATION SLABS / BATTS	Wall Width (mm)	AIRTEC U-VALUE, W/m ² K		Typical equivalent aerated Block 100mm
			10mm Traditional Mortar	2mm Thin-Joint mortar	
XL 2.9N	6mm 2L2 FR in a 75mm cavity	275	0.34	0.32	0.36
	25mm Celotex C3000 or EcoTherm Slabs	275	0.35	0.33	0.37
	25mm Kingspan TW50	275	0.32	0.30	0.34
	25mm Alreflex Ultratherm	275	0.31	0.30	0.33
STANDARD 3.6N	25mm Alreflex Ultratherm Slabs	275	0.32	0.31	0.34
	25mm Kingspan TW50	275	0.33	0.32	0.36
SEVEN 7.3N	25mm Alreflex Ultratherm Slabs	275	0.35	0.34	0.36

Blue figures indicate where the guideline value of 0.30 or better is achieved

Red figures indicate where a value of 0.30 is exceeded

Fully-Filled Airtec Cavity Walls to Achieve 0.30 W/m²K or better

- 300mm (max) wall width, excluding finishes
- 12.5mm plasterboard on dabs in all cases
Brick outer leaf in all cases

AIRTEC INNER LEAF (100mm Block)	CAVITY WALL INSULATION SLABS / BLOWN / INJECTED	Wall Width (mm)	AIRTEC U-VALUE, W/m ² K		Typical equivalent aerated Block 100mm
			10mm Traditional Mortar	2mm Thin-Joint mortar	
XL 2.9N	75mm Jablite Jabfill Slabs	275	0.30	0.29	0.32
	75mm Rocksilk slab or Rockwool Slab or Polypearl Beads	275	0.30	0.28	0.31
	75mm Isowool CWS Slabs or Crown Dritherm Slabs	275	0.29	0.28	0.30
	75mm Springvale Platinum Ecobead (injected)	275	0.28	0.26	0.29
	80mm Rockwool Energysaver (blown) or Isowool (blown)	280	0.29	0.28	0.31
STANDARD 3.6N	75mm Isowool Hi-Cav Slabs	275	0.30	0.29	0.30
	85mm Crown Dritherm Slabs	285	0.29	0.28	0.30
	85mm Rockwool Energysaver (blown) or Isowool (blown)	285	0.30	0.30	0.31
SEVEN 7.3N	80mm Isowool Hi-Cav Slabs	280	0.29	0.29	0.30
	85mm Crown Dritherm Slabs or Isowool CWS Slabs	285	0.30	0.29	0.30
	90mm Jablite Jabfill Slabs	290	0.30	0.29	0.30

Red numbers indicate where the guideline value of 0.30 is exceeded

Partially-Filled CAVITY Rendered Airtec Walls

- Partially-filled Cavity
- 50mm (min) clear cavity in all cases
- 300mm (max) wall width excluding finishes
- 12.5mm Plasterboard, dot & dab in all cases
- 100mm Block in all cases
- 25mm Cement : Sand render

OUTER LEAF (exposed)	INNER LEAF (protected)	CAVITY WALL INSULATION SLABS / BATTS	Wall Width (mm)	AIRTEC U-VALUE, W/m ² K
STANDARD 3.6N	XL 2.9N	15mm – Alreflex Ultratherm Platinum Slabs	265	0.30
		20mm – Kingspan TW50 Slabs	270	0.29
		25mm – Celotex CW3000 or EcoTherm Slabs	275	0.30
		35mm – Isowool Hi-Therm Slabs	285	0.29
STANDARD 3.6N	STANDARD 3.6N	20mm – Alreflex Ultratherm Platinum Slabs	270	0.29
		25mm – Kingspan TW50 Slabs	275	0.29
		30mm – Celotex CW3000 or EcoTherm Slabs	280	0.29
		35mm – Isowool Hi-Therm Slabs	285	0.30
SEVEN 7.3N	SEVEN 7.3N	30mm – Alreflex Ultratherm Platinum Slabs	280	0.29
		30mm – Kingspan TW50 Slabs	280	0.30
		40mm – Celotex CW3000 or EcoTherm Slabs	290	0.29
		50mm – Isowool Hi-Therm Slabs	300	0.30

SOLID Rendered Airtec Walls

AIRTEC BLOCK	INTERNAL FINISH Thermal Laminate Dry-lining on dabs (thickness of insulation quoted - excludes the laminated plasterboard)	AIRTEC U-VALUE W/m ² K
190mm STANDARD 3.6N	40mm – Kingspan Kooltherm K17 or British Gypsum Thermaline Super 50mm – Knauf Polyfoam Linerboard	0.29 0.30
215mm STANDARD 3.6N	35mm – Kingspan Kooltherm K17 or British Gypsum Thermaline Super 45mm – Knauf Polyfoam Linerboard	0.30 0.30
190mm SEVEN 7.3N	45mm – Kingspan Kooltherm K17 or British Gypsum Thermaline Super 65mm – Knauf Polyfoam Linerboard	0.30 0.29
215mm SEVEN 7.3N	45mm – Kingspan Kooltherm K17 or British Gypsum Thermaline Super 60mm – Knauf Polyfoam Linerboard	0.29 0.30

COMPARISON OF U-VALUES ACHIEVED USING A RANGE OF BLOCK TYPES

PARTIAL-FILL CAVITY INSULATION

- Brick outer leaf
- 50mm (min) clear cavity
- 300mm (max) wall width
- 12.5mm plasterboard on dabs

AERATED CONCRETE BLOCKS

 AIRTEC XL 2.9N	0.09	0.31	0.29	0.23	0.32	0.30	0.29	0.24	0.32	0.30	0.28	0.24	0.34	0.29	0.26	0.35	0.28	0.25	0.34	0.34	0.31	0.33	0.29
	Equivalent 2.9N aerated block from alternative manufacturers	0.11	0.33	0.30	0.24	0.34	0.31	0.30	0.25	0.34	0.32	0.30	0.25	0.36	0.30	0.27	0.37	0.30	0.26	0.36	0.36	0.32	0.34
 AIRTEC Standard 3.6N	0.11	0.32	0.30	0.24	0.33	0.31	0.30	0.25	0.34	0.31	0.29	0.25	0.35	0.30	0.27	0.37	0.30	0.26	0.36	0.36	0.32	0.34	0.31
	Equivalent 3.6N aerated block from alternative manufacturers	0.15	0.34	0.32	0.25	0.36	0.33	0.31	0.26	0.36	0.33	0.31	0.26	0.38	0.32	0.29	0.39	0.31	0.27	0.38	0.39	0.34	0.32
 AIRTEC SEVEN 7.3N	0.17	0.35	0.33	0.25	0.36	0.34	0.32	0.26	0.37	0.34	0.32	0.26	0.38	0.32	0.29	0.40	0.32	0.28	0.38	0.39	0.35	0.37	0.33
	Equivalent 7.3N aerated block from alternative manufacturers	0.19	0.36	0.33	0.26	0.37	0.34	0.32	0.27	0.37	0.35	0.32	0.27	0.39	0.33	0.30	0.41	0.32	0.28	0.39	0.40	0.35	0.38

AGGREGATE CONCRETE BLOCKS

Super-lightweight aggregate blocks from alternative manufacturers, made with pumice, expanded clays etc. (range of k-values and densities).	0.19	0.36	0.33	0.26	0.37	0.34	0.32	0.27	0.37	0.35	0.32	0.27	0.39	0.33	0.30	0.41	0.32	0.28	0.39	0.40	0.35	0.38	0.34
	0.24	0.37	0.34	0.26	0.38	0.35	0.33	0.27	0.39	0.36	0.33	0.27	0.41	0.34	0.30	0.42	0.33	0.29	0.41	0.42	0.37	0.39	0.35
	0.25	0.37	0.34	0.26	0.38	0.35	0.33	0.27	0.39	0.36	0.33	0.27	0.41	0.34	0.30	0.43	0.33	0.29	0.41	0.42	0.37	0.39	0.35
	0.30	0.38	0.35	0.27	0.39	0.36	0.34	0.28	0.40	0.37	0.34	0.28	0.42	0.35	0.31	0.44	0.34	0.30	0.42	0.43	0.37	0.40	0.35
Typical Lightweight Aggregate Block	0.42	0.39	0.36	0.27	0.41	0.37	0.35	0.29	0.41	0.38	0.35	0.28	0.43	0.36	0.32	0.45	0.35	0.30	0.43	0.45	0.39	0.41	0.36
Typical Dense Aggregate Block	1.13	0.41	0.38	0.28	0.43	0.39	0.37	0.30	0.43	0.40	0.37	0.29	0.46	0.37	0.33	0.48	0.37	0.32	0.46	0.47	0.41	0.44	0.38

● Blue figures = Achieves 0.30 W/m2K or better ● Red figures = Greater than 0.35 W/m2K and does not comply with Part L regulations

COMPARISON OF U-VALUES ACHIEVED USING A RANGE OF BLOCK TYPES

FULL-FILL CAVITY INSULATION

- Brick outer leaf - 300mm (max) wall width - 12.5mm plasterboard on dabs																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
Springvale EcoBead Platinum (injected)				Isowool Hi-Cav (slabs)			Crown Dritherm or Isowool CWS (slabs)			Knauf Rocksilk (slabs)			Rockwool (slab) or Polyppearl Plus (bonded beads)			Jablite Jabfill (slabs) or Springvale White Fulfill (slabs)			Rockwool Energysaver (injected) or Isowool Waltherm (injected)			Knauf Supatilli (injected)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
75mm		85mm		75mm		85mm		75mm		85mm		75mm		85mm		75mm		85mm		75mm		85mm		100mm																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
k																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
value																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
AERATED CONCRETE BLOCKS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
 AIRTEC XL 2.9N				0.09			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.25			0.23			0.28			0.2		

● Blue figures = Achieves 0.30 W/m²K or better ● Red figures = Greater than 0.35 W/m²K and does not comply with Part L regulations

Performance - ACOUSTIC

Airtec is a superb versatile building product. Not only does it offer an efficient, safe and lightweight solution to structural requirements as well as excellent thermal insulation properties, it also offers solutions to acoustic insulation requirements.

Aircrete has been proven to offer excellent acoustic insulation characteristics despite its relatively low weight and low density due to the thousands of microscopic bubbles within the structure.



PERFORMANCE STANDARDS & COMPLIANCE TO PART E

The table below summarises the acoustic insulation requirements for separating walls and floors (along with stairs) as well as internal walls and intermediate floors. These 'separating elements' can be walls or floors within a building or between adjoining buildings.

	Airborne sound insulation (minimum values) $D_{nT,w} + C_{tr}$	Impact sound insulation (maximum values) $L'_{nT,w}$
DWELLING HOUSES and FLATS – Purpose Built		
Separating Walls	45 dB	-
Separating Floors and Stairs	45 dB	62 dB
DWELLING HOUSES and FLATS – Formed by a material change of use		
Separating Walls	43 dB	-
Separating Floors and Stairs	43 dB	64 dB
RESIDENTIAL BUILDNGS – Purpose Built		
Separating Walls	43 dB	-
Separating Floors and Stairs	45 dB	62 dB
RESIDENTIAL BUILDINGS – formed by a material change of use		
Separating Walls	43 dB	-
Separating Floors and Stairs	43 dB	64 Db
NON-ACOUSTIC SEPARATING ELEMENTS:		
INTERNAL WALLS AND FLOORS - Dwellings or Rooms for Residential Purposes - Purpose Built or Formed by a material change of use. Airborne Sound Insulation R_w (minimum values)		
Internal Walls and Floors	40 dB	
SCHOOLS – New Build		
Internal Walls and Floors	Refer to guidance on meeting the requirements given in Building Bulletin 93 'The Acoustic Design of Schools' published by DfES	

Terms:

Dwelling: Houses and flats

Residential: Hotels, hostels, residential care homes, halls of residence, boarding houses etc

ROUTES TO MEETING PERFORMANCE REQUIREMENTS

The two common routes to compliance with the performance requirements as set out in Approved Document E of the Building Regulations are:

- 1 Pre-completion Testing (PCT), and
- 2 Robust Standard Details (RSD's)

PRE-COMPLETION TESTING (PCT)

PCT is intended to demonstrate compliance with Requirement E1 of Approved Document E "Protection against sound from other parts of the building and adjoining buildings". This applies to both dwellings and residential buildings.

Approved Document E includes numerous wall and floor constructions. If constructed in accordance with these guidelines, they should achieve the required acoustic insulation as in the table shown on the previous page. However, PCT must be carried out regardless.

For large developments there is a sampling approach that can be used so that not every single separating wall or floor has to be tested. The developer should liaise with building control who will determine the necessary testing regime.

ROBUST DETAILS (RSD'S)

Robust Standard Details are a collection of various new-build Separating Wall and Separating Floor constructions which, if built in accordance with the guidelines, eliminates the need for costly and time-consuming pre-completion testing (PCT) as is normally required to demonstrate compliance with Part E.

The principle behind all RSD constructions is that they will be capable of exceeding the acoustic insulation requirements set out in Approved Document E of the Building Regulations by at least 5 decibels.

Each RSD construction has been formed from an extensive acoustic insulation testing regime in the field and by in-depth design and analysis. RSD constructions are made as practical and simple as possible with a margin of allowance for slight variations in workmanship and materials.

To use a Robust Detail construction, an application must be registered with Robust Details Limited and a fee paid – further details can be found at www.robustdetails.com

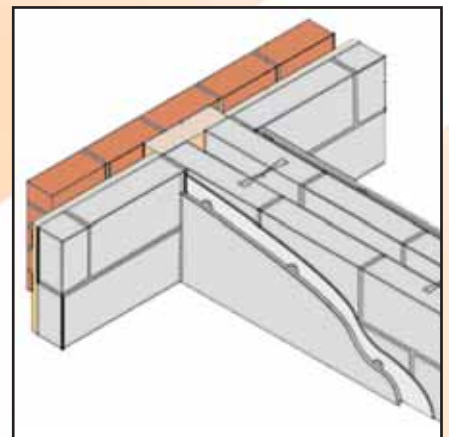
AIRTEC ROBUST DETAIL CONSTRUCTIONS

At present there are RSD Separating Wall constructions and Separating Floor constructions in which Airtec blocks can be used and where no pre-completion testing is necessary. These Robust Detail walls are suitable for new-build dwellings when there are no acoustic separating floors. They are therefore unsuitable for use in flats and apartments. An example Robust Detail is E-WM-6 below:-

E-WM-6: BASIC CONSTRUCTION (NEW BUILD HOUSES, DWELLINGS):

- Two leaves of 100mm (min) Airtec 3.6N Party Wall or 7.3N Seven blocks
- 75mm (min) clear cavity
- Type A wall ties (for 10mm joints, E-WM-6)
- 8mm cement : sand render with scratch finish (no stronger than 1: 1: 6)
- 12.5mm plasterboard on dabs
- Flanking walls to the separating wall can have an inner leaf of any Airtec grade block-work; Airtec XL, Standard, Party Wall or Seven

Other RD separating walls (E-WM-1 to E-WM-5 and E-WM-8) can have flanking walls of any AIRTEC grade (100mm min).



CAN AIRTEC BE USED IN FLATS AND APARTMENTS?

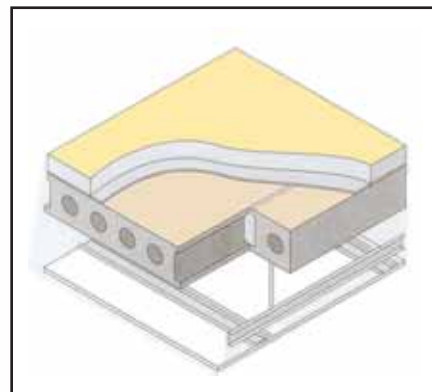
Yes. There are Robust Detail constructions in which Airtec flanking walls can be used where there is a Robust Detail acoustic separating floor – i.e. in Flats and Apartments. Currently, separating floor E-FC-4 is one such example:

E-FC-4 (PRECAST CONCRETE PLANK WITH SCREED LAID ON ISORUBBER RESILIENT LAYER)

The inner leaf of the external (supporting) cavity wall - the 'Flanking Wall' - can be constructed from AIRTEC XL 2.9N, AIRTEC Standard 3.6N or AIRTEC Seven 7.3N blocks.

No PCT at all is required if the adjoining Separating wall is one of E-WM-1 to E-WM-5, or E-WM-8.

If the adjoining separating wall is E-WM-6, the separating FLOOR will require PCT but the separating wall will not.



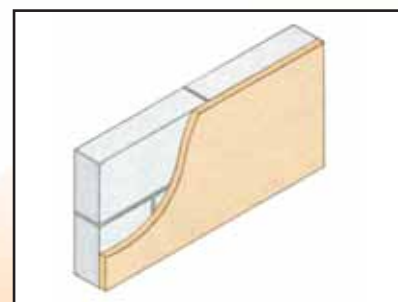
OTHER ACOUSTIC ELEMENTS NOT REQUIRING PCT

Section 5 of the Approved Document describes suitable constructions for internal floors and walls for new buildings. If built in accordance with the guidelines, should meet laboratory acoustic insulation values as shown in the table earlier in this section.

INTERNAL WALLS

Part E of the building regulations require that internal partition walls achieve a sound reduction of 40dB. This can be achieved by using:

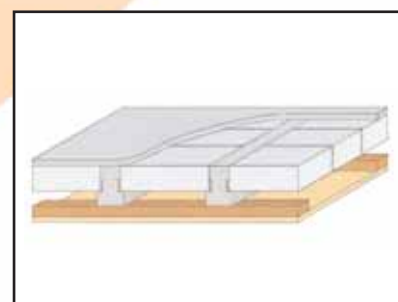
- Any Airtec Standard 3.6N or Seven 7.3N block wall without any finish, if desired.
- Any Airtec XL 2.9N block wall finished with plasterboard on dabs or a dense plaster finish.



INTERNAL FLOORS

Part E of the building regulations require that internal partition floors achieve a sound reduction of 40dB. This can be achieved by using:

- Airtec Large Format (flooring) blocks 100mm thick used as block and beam floor infill with 40mm screed above
- 12.5mm plasterboard ceiling beneath.



Performance – FIRE RESISTANCE

Airtec blocks provide excellent fire resistance in accordance with the building codes and building regulations.

Airtec blocks have been independently tested to the very latest rigorous European Standards and have achieved the best possible resistance to fire rating of “CLASS A1” to BS EN 13501-1 : 2002 (superior to the former BS6073 ‘Class 0’ spread of flame rating).

Walls constructed from Airtec blocks comply with Building Regulations Approved Document B, Appendix A, Table A6.

Further guidance can be found in our BBA Certificate 06/4309



Airtec walls make ideal fire breaks in both loadbearing and non-loadbearing constructions.

A wall constructed of 100mm Airtec can provide up to 4 hours of fire resistance for a non-loadbearing wall and up to 2 hours protection for a loadbearing wall.

FIRE RESISTANCE PERIODS

The table below summarises fire resistance periods that can be expected with various Airtec constructions.

		Minimum AIRTEC Block Thickness Required (mm) for stated fire resistances					
Wall Type	Finish	6hrs	4hrs	3hrs	2hrs	1.5hrs	1hr
Loadbearing – Single Leaf	None	215mm	190mm	140mm	100mm	100mm	100mm
	Plaster	190mm	150mm	100mm	100mm	100mm	100mm
Loadbearing - Cavity	None	150mm	150mm	140mm	100mm	100mm	100mm
Non Loadbearing – Single Leaf	None	150mm	100mm	100mm	100mm	100mm	100mm
	Plaster	150mm	100mm	100mm	100mm	100mm	100mm
Non Loadbearing - Cavity	None	100mm	100mm	100mm	100mm	100mm	100mm

- The above figures apply to all Airtec grades, 2.9N, 3.6N and 7.3N
- These figures apply to both Traditional and Thin-Joint mortar constructions
- Wall ties and anchors must be non-combustible

Working With AIRTEC

WORKABILITY

Airtec blocks are extremely user-friendly. As well as being lightweight and easy to place, they can be cut, drilled and shaped using standard hand-tools and fixings.

This allows for easy shaping of blocks and greatly reduces waste due to the accuracy of cutting achievable. This is particularly advantageous around bay windows and cavity closures.

This section gives basic guidelines and tips for working with Airtec blocks and general site practice.



GENERAL TIPS

- Airtec blocks are abrasive in nature and will wear down steel tools over time. It is recommended that carbide-tipped tools are used wherever possible to lengthen tool life.
- Avoid using power tools for cutting Airtec blocks whenever possible. Pneumatic and percussive power tools can lead to increased chipping or breaking of Airtec blocks.
- A much cleaner cut is obtained using hand-saws.
- Avoid over-tightening fixings into Airtec blockwork.
- Fixings should not be closer to the edge of the block than the depth of embedment.

CUTTING

- Wherever possible, avoid the use of circular saws for cutting Airtec.
- A much cleaner cut with minimum damage will be obtained by using hand-saws or if necessary band-saws.
- Special hand saws designed for use with aircrete blocks are widely available. These saws have large, widely-spaced carbide tipped teeth for ease of cutting.

DRILLING

- Standard HSS steel drill bits should be used for drilling into Airtec blocks. Masonry drill bits are not recommended.
- Use a slower drill speed without any hammer action.
- Use a slow, constant speed.

CHASING

- A disc saw can be used for cutting parallel tracks into the blockwork.
- A woodworking chisel can then be used to clear the excess material and form the chase.
- Vertical chases should not be greater than one third the depth of the thickness of the block and horizontal chases no greater than one sixth the depth of the block in compliance with the Building Regulations.

FIXINGS

An Airtec block wall provides a very good anchor for various fixings, screws and plugs. The ease and speed with which Airtec blocks can be drilled simplifies the task of fitting out and finishing off a construction.

- Nails and screws should be long enough to provide adequate grip.
- For light fixings (skirting boards, door frames) use cut nails skew driven at not more than 500mm centers and penetrating at least 50mm into the Airtec block.
- Common wall plugs, anchors and wood screws can be used for light fixings. Proprietary plugs for aerated blocks should be used for heavier duty applications such as hanging wall units.
- Spiral plugs and spiral (helical) nails are suitable for Airtec walls, made from stainless steel.
- Where the fixing is subject to high stresses, vibration or load cycling, special fixings such as resin grouted screws and screw-in anchors may be required.

Further guidance can be found in our BBA certificate 06/4309 (available at www.bbacerts.co.uk)

MORTARS

- Airtec blocks should be laid adhering to the recommendations in the masonry Code of Practice, BS 5628 Part 3:2001 or BS 8000 Part 3:2001 workmanship on building sites.
- A full bed of mortar should be used with the perp-ends fully covered.
- If the walls are to be plastered or rendered, the mortar joints should be raked back to provide additional key.
- Over-strong mortars should be avoided. Airtec is more suited to lower strength mortars.



Construction	Mix Proportions (by volume)		Notes
Above dpc	Cement: Lime: Sand Cement: Lime: Sand Cement: Sand (with plasticizer) Masonry Cement: Sand	1: 2: 9 1: 1: 6 1: 6 1: 5	Class iv or iii as per BS 5628-2
Below dpc	Cement: Lime: Sand Cement: Sand	1: 1½: 4½ 1: 4	Below dpc, the mortar should be stronger. Sulphate resisting mortar may be required.
Thin Joint	- All Airtec blocks are suitable for thin-joint construction. - Thin joint mortar is normally supplied in 25kg bags - Mixing and workmanship should be strictly in accordance with the manufacturer's instructions.		

RENDERS AND PLASTERS

The quality and durability of plaster coats and render is greatly influenced by:

- 1 The quality and suitability of materials
- 2 The quality and thoroughness of preparation
- 3 The quality of workmanship and adherence to codes and standards

Materials and workmanship should always comply to BS 5262: 1991 Code of Practice for external renders.

PREPARATION – ALL RENDERS AND PLASTERS, INTERNAL OR EXTERNAL

- The textured faces of Airtec blocks provide an excellent key for plasters and renders.
- Airtec is suitable for internal and external walls.
- With traditional mortar construction, the mortar joints should be raked back to provide an additional key for the render.
- The blocks should be clean and free of dust and debris.
- Fungi or algae growth must be removed using a suitable fungicide.
- In certain circumstances, the initial natural suction of the aircrete substrate can draw the moisture from the render and adversely affect hydration and setting. If this occurs, apply water to the block faces with a fine spray or brush immediately prior to application. Do not apply too much water. Avoid saturation.

EXTERNAL RENDERS

- At least 2 coats should be applied. Each successive coat should be weaker than the first. Avoid strong mixes.
- The first coat should be applied to a thickness of approx 8-18mm and scratched. The final coat should be thinner and less strong than the first, usually 6-10mm.
- Apply down to dpc, but do not bridge the dpc.
- Apply a bituminous coating between finished ground level and dpc if external Airtec walls are used.
- Avoid cement-rich renders because they use more water for hydration and can lead to pronounced drying shrinkage.
- Sharp sand should be used, compliant with BS 1199 and BS 1200. Use only clean, well graded sand with very low fines content.
- Recommended finishes include wood-float, scraped or textured.



	Mix Proportions (by volume)		Notes
Preferred Mix	Cement: Lime: Sand	1:2:9	Type iv: more suited to sheltered exposure conditions
	Cement: Lime: Sand	1:1:6	Type iii: more suited to moderate and severe exposure
Alternative	Cement: Sand (with plasticizer)	1:6	With the addition of an approved plasticizer to manufacturers instructions
Alternative	Masonry cement: sand	1:5	Avoid cement-rich renders because they use more water for hydration and can lead to drying shrinkage

INTERNAL RENDERS & PLASTERS

- Guidance is given for the choice of plaster for a particular application in BS 5492:1990 and BS 5628 Part 3:2001.
- Consideration should be given to the differential expansion that can occur at the interface of two dissimilar materials. Gypsum plasters have greater thermal expansion.



	Base Coat Cement: lime: plastering sand	Finish Coat	Notes
Dense Plaster	1:2:9 1:1:6 Approx 10mm thick	A skim coat of gypsum plaster Approx 3mm thick	Avoid rapid drying out of base coat
Lightweight Plaster	- Proprietary gypsum plasters requiring only the addition of water for both base and finish coats are available. - Manufacturer's instructions must be strictly followed.		Never mix Portland cement and gypsum plaster.

OTHER FINISHES.....

PAINTING

The finish of Airtec blocks provides an excellent surface on which to paint onto directly whether it be applied with a brush, roller or spray-gun. The very best finish can be gained as follows:-

- 1** Use an alkali-resistant paint preferably, although most paints are suitable.
- 2** Apply a slightly thinned-down first coat and leave to dry
- 3** Apply the final coat at normal thickness
- 4** Plastic emulsion paints are particularly suitable

Please note that Airtec blocks are not intended to provide the same finish as a fairfaced facing-quality concrete block. However, should a fair-faced finish be required, the naturally occurring air bubbles on the block surface can be easily filled.



TILING – INTERNAL & EXTERNAL

Tiles should be applied to Airtec walls which have been rendered or plastered. A cement:sand render generally provides a stronger and more suitable background for tiling than a plaster background. If using a plaster background, then a dense plaster is recommended as opposed to a lightweight plaster. Generally, the render / plaster coat should be perfectly level and be left to dry for at least 2 weeks before applying the tiles.

Internal

In accordance with BS 5381 : Part 1, the recommended render mix for tiling onto Airtec walls is 1:5 Cement:Sand and the surface scratched to provide an additional key for the tiling adhesive. Always follow guidance from the tiling manufacturer or supplier.

External

Airtec blocks are perfect for external tile hanging because they can be readily applied directly via fixings such as screws and nails. Again, a rendered surface is always recommended as a background to the tiling. Further details are contained in BS 5385 : Part 2.

DRY LINING

The most common form of fixing drylining systems to Airtec walls is by the dot & dab method. The plaster dabs should be applied as per the board manufacturer's recommendations and the boards held level until the plaster dabs set. The boards should be additionally held by secondary fixings such as proprietary screws and nails as per the manufacturer's recommendations.

Drylining boards can also be fixed onto Airtec walls using timber battens. Again, follow the manufacturer's recommendations along with the guidance in the 'Fixings' section of this manual.

CLADDING, BOARDING

Cladding and boarding of most types can be fixed directly to Airtec walls. However, for better anchorage the cladding can be fixed onto vertical timber battens fixed directly to the blockwork. External tiles can be hung from horizontal battens fixed directly to the Airtec blockwork. A vapour permeable layer between the blockwork and the cladding should be used.

Design Details

MOVEMENT CONTROL

Under normal circumstances, masonry constructions will experience some movement associated with drying shrinkage, thermal expansion and contraction. This can be easily accommodated by using suitable methods.

Calculating exact movements is not feasible in practice and therefore several rules of thumb have been established for masonry construction which has been proven to work in practice over many years.



MOVEMENT JOINTS

Internal walls of low-rise dwellings and houses do not normally require movement joints and the use of bed joint reinforcement is usually sufficient. Movement joints are not normally needed below dpc. Movement joints are particularly suitable at intersections of dissimilar materials, at intersecting walls for example.

For acoustic separating and party walls, vertical movement joints should not be used.

GENERAL GUIDELINES:

- Airtec blockwork should be divided into approximately 6m long panels.
- Each panel should be separated by a suitable vertical movement joint placed in unobtrusive locations (note: not to be used in acoustic separating or party walls).
- The first movement joint should not be more than 3m distance from an internal or external corner / angle.
- Adverse effects of movement can be minimised by protecting from extremes of moisture before, during and after construction.
- Recommendations can be found in BS 5628: Part 3: 1985 clause 20.
- Over strong mortars should be avoided to reduce the effect of movement.
- Movement joints can be formed by butting up the Airtec blocks against a 10mm strip of rigid filler which is left in place until the wall is finished. This can remain in place or be removed. However, additional sealing is recommended to achieve adequate air tightness.
- Stop beads should be used at the ends of the joint.

BED JOINT REINFORCEMENT

Bed joint reinforcement is particularly suitable for houses and low rise dwellings and wherever a vertical movement joint may not be aesthetically practical. Reinforcement laid on horizontal beds is particularly suitable for areas of high stress. For example, under concentrated loads such as loadbearing joists or beams and at openings around windows and doors.

GENERAL GUIDELINES:

- The reinforcement should extend at least 600mm into adjacent blockwork.
- Ideally the reinforcement should be of a suitable length so that any stresses are transmitted to movement joints or adjacent areas of blockwork.
- Reinforcement should normally have a mortar cover of at least 13mm on the face of the internal blockwork and 25mm on the external faces.
- Where a wall is supported by a floor, the first two courses above the floor junction should be bed-joint reinforced.
- Masonry grade reinforcement should be used. Plastering grades are not suitable.

WALL TIES

- Wall ties should be flexible enough to accommodate relative movement between both leaves of a cavity wall but stiff enough to transmit axial loads.
- Stainless steel wall ties should be specified, the type according to whether they are for use with traditional mortar or thin-joint construction.
- Ties should conform to BS 1243: 1978 or BS DD 140: Part 2: 1987.
- For traditional 10mm mortar construction, conventional butterfly or double-triangle ties should be embedded to at least 50mm into the mortar joint in each leaf.
- Driven wall ties should be embedded into the Airtec block to a depth at least matching that when embedded onto the outer leaf mortar joint (when building the Airtec inner leaf first). Positioning will be determined by the coursing levels of the outer leaf.
- When using partial internal cavity insulation, suitable retaining devices should be used for supporting the cavity batts.
- The leaves should be coursed such that the ties are either level or slope outwards to avoid water penetration to the inner leaf. The drip should be positioned so that it points downwards.



A NOTE ON THIN-JOINT MORTAR WALL TIES:

Thin-Joint construction wall ties are the helical twist type that are hammer driven into the face of the aerated block on the inner leaf at the appropriate mortar joint level on the outer leaf as construction progresses.

Alternatively, ties that can be face-fixed to the block are also suitable. The tie should be anchored into the Airtec block using an expanding nail or similar fixing. Frame-fix ties must be installed correct side up and placed horizontally or with a slight fall to the outer leaf.

WALL TIE SPACING AND POSITIONING

- Recommended wall tie spacing and positioning should be in accordance with BS 5628 Parts 1 and 3; a density of 2.5 ties per m².
- Ties should be evenly distributed over the entire wall area.
- Use a staggered pattern when both leaves are greater than 90mm thick.
- Distance from a vertical movement joint or vertical edge of any opening (door, window) should be no greater than 225mm.

Cavity Width	Horizontal Spacing	Vertical Spacing
50mm to 75mm	No more than 900mm apart	No more than 450mm apart
75mm to 150mm	No more than 750mm apart	No more than 450mm apart

LINTELS

Airtec block walls can accommodate most types of lintel, in particular; Concrete Lintels, Steel Lintels and Box Lintels.

- Construction should be in accordance with BS 5628-3 : 2005.
- Wherever possible, the masonry should be set out so as to provide a full block under a bearing. Generally, lintels should have a bearing of no less than 150mm either side.
- In solid Airtec walls, the inverted T-shape steel lintel can be used and the block chased out accordingly.
- Specific calculations should be carried out in heavily loaded walls and consideration should be given to the use of load-spreading methods and suitable padstones.
- A slip plane should be provided between the lintel and the bearing face to accommodate differential movement.



JOIST HANGERS

Joist hangers may be used provided that:

- They are compatible with aerated blocks with compressive strengths of 3.6N and above.
- Installation is in accordance with the hanger manufacturer's instructions.
- The Airtec course to carry the hangers is level and at the correct height.
- The hanger bears directly onto a complete block with the back plate flat against the block.
- The gap between the joist and the back plate does not exceed 6mm.
- The blockwork above the hanger is complete and matured before any load is applied to the hanger.

CAVITY CLOSING

To maximise the thermal insulation achieved by using Airtec blocks in external cavity walls, there are a number of points to consider during the design and construction stage. These points not only maintain the thermal integrity of the Airtec envelope and minimise cold-bridging, they also aid the accommodation of movement caused by dissimilar materials.

These details have assumed greater importance recently with changes to Part L of the Building Regulations and the increasing importance of methods for reducing emissions (e.g. SAP 2005) and increasing airtightness:

- The easy cutting and shaping of Airtec blocks allow the formation of Airtec reveals at the vertical edge of window and door openings.
- To avoid contact between dissimilar materials and associated movement problems, a slip-plane of dpc type material should be inserted between the vertical interface.
- At the eaves level of the cavity wall, the cavity can be closed by laying a course of Airtec blocks flat to close the cavity.

Thin Joint Construction

WHAT IS THIN JOINT CONSTRUCTION?

Thin Joint mortar construction is an accepted **Modern Method of Construction (MMC)** that utilizes 2-3mm thick mortar joints. This method of construction is very well established throughout Europe and with the ever increasing tightening of Building Regulations and Codes of Practice, Thin Joint mortar construction will assume greater significance in the UK due to the numerous benefits offered by this method.

Applications for Thin Joint construction include: Internal and External leaf of cavity walls, Party walls and Flanking walls, Internal Partition walls, Solid walls and Foundation walls.

ARE AIRTEC PRODUCTS THIN JOINT COMPATIBLE?

Yes. Because very thin 2mm mortar joints are used, the dimensional accuracy of the block is absolutely critical since there is less leeway in adjusting coursing heights by varying the thickness of the mortar bed as with traditional mortar construction.

All Airtec products comply with the most rigorous dimensional tolerance category as defined by the latest European Standards, 'Thin Layer Mortar category B' (TLMB). Unlike other dimensional tolerance categories (General Purpose or TLMA) very tight constraints on the flatness of the bed faces and block parallelism to a tolerance of 0.1mm are imposed.

Due to the completely unique Airtec manufacturing process, this accuracy is consistently achieved on **all** Airtec blocks.

THE BENEFITS OF THIN JOINT

- **THERMAL INSULATION**

Thinner mortar joints means significantly less thermal bridging through mortar joints. U-Value improvements of up to 10% can be achieved over conventional mortar walls made with the same block. This could reduce the thickness of expensive secondary insulation in the wall, whilst still achieving the required U-Value.

- **QUICKER BUILDS**

Quick setting proprietary mortar essentially 'glues' the block together and the next course is ready to lay within a very short space of time. Purpose made serrated Thin Joint mortar trowels allow for quick, easy and accurate application of mortar to the correct thickness.

- **EASIER TO BUILD WITH**

The accuracy of Airtec blocks and the use of tools available to ensure correct mortar bed thickness and width mean that less skill is required by the bricklayer to form correct mortar joints. By ensuring that the first course is laid completely level using conventional mortar, blocks are effectively glued together from thereon.

In addition, the rapid setting of the mortar allows for more stable walls during construction and no chance of blocks settling down out of true as is possible with conventional mortar joints.

- **IMPROVED AIRTIGHTNESS**

As with the improvements in thermal insulation, the significant reduction in the proportion of mortar in a wall greatly improves airtightness of the construction.

- **LESS WASTE, BETTER QUALITY CONSTRUCTION**

A bucket and stirrer is all that is required to make the mortar. Therefore, no need for bags of sand, cement and lime or a cement mixer on site.

The inner leaf of the cavity wall can be built before the outer leaf because the wall ties are the helical twist-type and are driven into the Airtec leaf at a point where it will course with the outer leaf as the build proceeds. This eliminates the problem of mortar snots forming on the wall ties and in the cavity.

THIN JOINT MORTAR

Mortar for Thin Joint construction is widely available through most builders' merchants in the form of 25kg bags of dry, pre-mixed powder. Mortar mixing is simply done by adding water to the bagged powder according to the mortar manufacturers instructions and if made correctly will ensure that the correct mortar strength is achieved for use with aerated blocks.

Typically, a 25kg bag of dry mortar mix should yield enough mortar for 10 – 15m² of blockwork, although the face size and block thickness will of course influence the yield.

TOOLS AND ANCILLARY COMPONENTS

At present Thomas Armstrong (Concrete Blocks) Ltd do not supply tools and ancillary components for Thin Joint construction as they are widely available through builder's merchants. We are able to recommend suitable suppliers on request.

These include a variety of mortar applicators of various widths to match the most commonly used block thicknesses along with aerated block hand-saws, whisk drill mixing attachments, sanding boards and specialist wall ties.

LAYING

- It is absolutely essential that the first course is laid accurately level to +/-1mm using conventional mortar and left to cure overnight.
- The Thin Layer mortar should be prepared strictly in accordance with the manufacturer's recommendations. A hand-held slow speed drill with whisk attachment may be used. Once mixed, the mortar should remain workable for up to 4 hours typically.
- Remove any dust, dirt or debris on the block bed face to be mortared using a stiff brush.
- Avoid using overly wet blocks as this can delay the setting of the Thin Joint mortar.
- Using the specialist serrated trowel, the mortar is spread evenly across the bed face to a thickness of 2-3mm, ensuring all joints are fully filled.
- The blocks should be pressed firmly against the mortared vertical face of the preceding block whilst being lowered onto the mortar bed below. A rubber mallet can be used to tap the block into position and make level. Remove any excess mortar as soon as possible.
- After application, the mortar will begin to set within 10 minutes typically.
- Normally in Thin Joint construction the inner leaf can be built well ahead of the outer leaf. However, if there is a delay due to weather conditions for example, the inner leaf wall should be supported and propped suitably until such time it can be tied to the outer leaf. Similarly in bad weather, the exposed inner leaf should be protected as far as possible.
- The same guidelines on the accommodation of movement applies to Thin Joint blockwork as for conventional walls (refer to the Movement section for further guidance).
- Specially designed Bed Joint reinforcement is produced specifically for Thin Joint masonry and we recommend that this is used if possible.
- Helical ties can be hammer driven into the Airtec inner leaf at the appropriate mortar joint level of the outer leaf as construction progresses.
- Alternatively, ties that are to be face-fixed to the Airtec leaf should be anchored through the hole provided in the tie using an expanding nail or similar fixing (refer to the section on Fixings for further guidance). Frame-fix ties must be installed correct side up and placed horizontally or with a slight fall to the outer leaf.
- Other detailing such as cavity closing, lintels, finishes and fitting out is the same as for conventional blockwork.
- At window openings, use full block heights and then use cut pieces of block to build up to sill level and lintel height. Alternatively, whole blocks can be cut to accommodate the lintel.

Please refer to our BBA Certificate 06/4309 for further details.

SITE PRACTICE

AIRTEC PACKS

Airtec blocks are packed upright, banded and shrink wrapped in high quality heavy duty plastic.

The packs are supplied with or without pallets as required.



SAFE UNLOADING AND STORAGE OF AIRTEC

Care should be taken when unloading packs of Airtec blocks, be it by fork-truck or lorry grab. It is good practice to take steps to minimize the amount of mechanical handling of the packs as far as is reasonably practicable.



The following guidelines should be adhered to when using Airtec blocks on site:

- The packs should be carefully lowered from the lorry onto firm, level ground in an area where they can remain undisturbed until they are required.
- Repeated handling of the packs should be kept to an absolute minimum to avoid unnecessary damage to the blocks.
- The packs are wrapped in plastic but further precautions should be taken to avoid excessive wetting of the blocks by storing in as dry an area as possible.
- Ideally, packs of Airtec blocks should be stacked to a maximum of four-high on firm-level ground but should never be un-banded at such a height.
- On soft, uneven or loose ground Airtec packs should never be stacked greater than two-high.
- When un-banding the packs, care should be taken to avoid the blocks from falling over and breaking; the likelihood of this is reduced if the pack is un-banded on level ground.
- When using more than one grade of Airtec product, care must be taken not to mix them up. It is advisable that a means of physical segregation of the packs on site is maintained. If this is not practical for limitations on the space available, keep the plastic wrapping and banding on the packs until the blocks are required.
- The block type is indicated on the packing label and the strength grade is ink-sprayed onto the blocks on one side of the pack.
- Blocks that may have become wet during storage should be left to dry out prior to use in order to avoid possible drying shrinkage and cracking of the completed blockwork.

SAFE HANDLING OF AIRTEC BLOCKS

The Health and Safety Executive (HSE) in conjunction with the Construction Industry Advisory Committee (CONIAC) have identified that the repetitive manual handling of heavy concrete can result in injury over a period of time. A guideline maximum weight of 20kg per block has been set in repetitive manual handling situations so as to reduce the risk of injury.

Due to their cellular microstructure, all Airtec products are less than half the weight of an equivalent strength ordinary concrete block.

The majority of Airtec blocks are within the 20kg weight limit and where weights exceed 20kg – for example on the large Foundation blocks – special on site handling precautions should be taken. In addition, all Airtec Foundation blocks are provided with hand-holds to make lifting easier and safer.



SETTING OUT & BLOCK LAYING

The ease by which Airtec blocks can be cut and the provision of Airtec Brickettes give the builder far more flexibility in setting out blockwork and obtaining correct coursing heights.

Airtec blocks are durable and are BBA certified to be resistant to freeze-thaw cycles. However, in common with all masonry work, good working practices should be adhered to including the following:

- Keep Airtec blocks protected from the weather and allow excessively wet blocks to dry naturally before using. Avoid excessively rapid drying out of the blocks.
- Always use a full bed of mortar and always use fully-filled perpend mortar joints. This is especially important for acoustic Party/Separating walls.
- Use the recommended mortar mixes. Avoid the use of overly strong mixes.
- After laying, protect the blocks far as possible from wetting and frost until the mortar has matured and gained full strength.
- Movement joints and bed joint reinforcement should be built in as the work proceeds.
- Lintels should bear onto full blocks wherever possible or at a minimum 150mm.
- When walls are to be externally rendered or internally plastered, rake back the mortar joint to give the coating a better key to adhere to the blockwork.



For Thin Joint mortar construction, please refer to the relevant section for further guidance.

Material Health and Safety Data Sheet

PRODUCT NAME	Airtec Aerated Concrete Blocks
DESCRIPTION & APPLICATION	Aerated concrete ('aircrete') building blocks for walls, foundations and flooring applications manufactured in various grades of strength and density and a range of sizes for use in the construction industry.
GRADES	Airtec XL: - 2.9N/mm ² strength; 460kg/m ³ density Airtec Standard: - 3.6N/mm ² strength; 530kg/m ³ density Airtec Party Wall: - 3.6N/mm ² strength; 600kg/m ³ density Airtec Seven: - 7.3N/mm ² strength; 730kg/m ³ density
COMPOSITION	Cement; lime; pulverised fuel ash (PFA); aluminium and water
GENERAL HAZARDS	Airtec products are inert and can be regarded as non-hazardous within the meaning of the Health and Safety at Work Act 1974 and COSHH Regulations 1988. Suitable PPE (hard hat, gloves and safety footwear) should be worn as a matter of course when building constructions using Airtec products.
EYE	Avoid dust getting into the eyes by wearing suitable eye protection when carrying out any cutting, drilling and chasing of Airtec blocks. First Aid measures: If dust should irritate the eyes, wash with copious amounts of clean water. If irritation persists, seek medical advice.
SKIN	Avoid abrasion by wearing suitable gloves and clothing. First Aid Measures: wash with soap and water. Seek medical advice if irritation persists.
INHALATION	Wear a suitable dust-mask when carrying out operations that can create dust.
INGESTION	First Aid Measures: drink plenty of water.
MANUAL HANDLING	Although Airtec blocks are some of the lightest masonry products available, good manual handling practice should be employed at all times and specialist advice should be sought when dealing with blocks over 20kg in repetitive handling situations.
STORAGE	Airtec blocks are supplied in banded, plastic-wrapped packs and should be stored on firm, level ground. Care should be taken when unwrapping and un-banding the packs as individual blocks may fall over. We recommend a maximum of 4 packs high for storage on firm, level ground. On soft, loose or uneven ground do not stack higher than 2 packs.
DISPOSAL	Airtec blocks should be disposed of in accordance with local regulations.
CONTACT	Thomas Armstrong (Concrete Blocks) Ltd. Bridge Road, Brompton-on-Swale, Richmond. North Yorkshire. DL10 7HW Tel: 01748 810204 Fax: 01748 813950 E-mail: airtec@thomasarmstrong.co.uk



THOMAS ARMSTRONG (CONCRETE BLOCKS) LTD.

Bridge Road, Brompton on Swale,
Richmond, North Yorkshire, DL10 7HW

Tel: 01748 810204

Fax: 01748 813950

www.thomasarmstrong.co.uk

Our facility is the most advanced in
the UK and utilises the next
generation of aircrete technology.

The sales office is based at Brompton
on Swale (near Catterick) and
handles all quotations, transport and
logistics, continuing the company
policy of using locally trained
employees to offer personal service
from the point of manufacture.

The factory is located adjacent to the
A1 and is able to utilise both internal
and external haulage to provide a
comprehensive transport distribution
system across the United Kingdom.

In addition, transport is available for
smaller eight wheeler loads using the
existing eight production facilities
across England and Scotland.



CATTERICK (Airtec Blocks) Bridge Road, Brompton-on-Swale, Richmond, North Yorkshire DL10 7HW
Tel: 01748 810204 • Fax: 01748 813950 • Email: airtec@thomasarmstrong.co.uk



CONSETT (Block Paving) Unit G1, Park Road, Blackhill, Consett, Co. Durham DH8 5SP
Tel: 01207 505655 • Fax: 01207 592345 • Email: blocks@thomasarmstrong.co.uk



NEWCASTLE (Concrete Blocks) Whinfield Works, Rowlands Gill, Newcastle upon Tyne NE39 1EH
Tel: 01207 544214 • Fax: 01207 541800 • Email: blocks@thomasarmstrong.co.uk



THIRSK (Concrete Blocks) Pickhill, Thirsk, North Yorkshire YO7 4JQ
Tel: 01845 567282 • Fax: 01845 567606 • Email: blocks@thomasarmstrong.co.uk



AINTREE (Concrete Blocks) William Rainfords Ltd, Heysham Road, Aintree, Liverpool L30 6UQ
Tel: 0151 525 5991 • Fax: 0151 530 1676 • Email: wrainford@thomasarmstrong.co.uk



ST. HELENS (Concrete Blocks) William Rainfords Ltd, Watery Lane, St. Helens WA9 3HB
Tel: 01744 750206 • Fax: 01744 25895 • Email: wrainford@thomasarmstrong.co.uk



SILLOTH (Concrete Block Paving) Coulthard Concrete Products (1980) Ltd, Blackdyke, Silloth, Cumbria CA5 4PD
Tel: 01697 331324 • Fax: 01697 331418 • Email: aggregates@thomasarmstrong.co.uk



CONGELTON (Concrete Blocks) Barnetts of Buglawton Ltd, Brook Street, Congelton, Cheshire CW12 1RH
Tel: 01260 273170 • Fax: 01260 298150 • Email: barnetts@thomasarmstrong.co.uk



LEEDS (Concrete Blocks) Stocks Bros. Ltd, Ninelands Lane, Garforth, Leeds LS25 1NT
Tel: 0113 2320022 • Fax: 0113 2870839 • Email: sales@stocks-blocks.co.uk



WORKINGTON (Group Head Office) Workington Road, Flimby, Maryport, Cumbria CA15 8RY
Tel: 01900 68211 • Fax: 01900 602672 • Email: info@thomasarmstrong.co.uk