

# Application datasheet 2

## The use of aircrete in concrete beam and block flooring



**Beam and aircrete block suspended floor systems offer improved thermal insulation, reliability and performance, whilst their lightweight construction and simple, system-build installation provides faster build times.**

The result is not only a superior form of construction, but offers significant cost savings in many situations. It is now more popular than timber or solid concrete floors in new housing at ground level.

Beam and block flooring can also achieve up to A+ in the BRE Green Guide ratings depending on the finish used.

### Sustainability

Aircrete is a sustainable building product, making extensive use of recycled materials and materials primarily sourced within the UK. All APA members are committed to operating sustainably, complying with all relevant legislation, regulations and codes of practice.

Aircrete manufacturers are committed to a responsibility to the environment as embodied in their environmental policies operating Environmental Management Systems to BS EN ISO 14001 and demonstrating Responsible Sourcing with all APA members having BES 6001 certification at 'Very Good' or higher level. Constructions containing aircrete can give up to A+ under the Green Guide ratings.

### Superior thermal performance

With a suspended beam and aircrete block floor, ground floor heat loss is reduced requiring less insulation than some other forms of construction, offering excellent cost savings through the reduction of secondary insulation.

Further thermal improvements can be achieved using aircrete blocks in the foundations (see application datasheet 1 - the use of aircrete below ground).

Aircrete constructions and details achieve significant improvements in linear thermal bridging values (psi values), which will become more and more dominant as fabric insulation increases. These details effectively reduce heat loss at the junctions of constructions, further reducing CO<sub>2</sub> emissions. The use of aircrete enhanced construction details, such as the LABC Registered Construction Details or the Constructive Details (ECDs) can result in significantly lower psi and y-values, generally half of the default values that are used in SAP assessments.

### Improved noise insulation

Because of its higher mass compared to conventional timber or particle board floors, Aircrete gives improved potential for sound insulation between ground and upper floor rooms meeting the 40dB Rw required by Part E of the Building Regulations. It also permits the use of blockwork dividing walls between upper floor rooms, achieving better noise reduction than with stud walls.

### Easy to work with

Though very strong, aircrete's light, cellular structure means it can be cut easily to size or chased using everyday hand tools.

### Freedom of design

A beam and aircrete block construction affords a tremendous amount of flexibility in the layout of blockwork partitions at upper floor levels. Aircrete suspended floors can also be finished with any type of flooring materials, including many screeds or timber particle board. If used in garages, a reinforced screed is normally applied.



# Application datasheet 2

## The use of aircrete in concrete beam and block flooring



### Highly durable

Aircrete is unaffected by moisture, cannot rot and is frost resistant, making its long term durability reassuringly predictable.

### Fire resistance

Aircrete floor blocks are non combustible and conform to Class 'O' rating for the surface spread of flame.

### Increased productivity

Being lightweight and easily handled, aircrete blocks are simple and quick to install. Unlike wet processes, floor blocks enable fast coverage of the floor area, which in turn establishes a finished working platform for follow-on trades (See protection and handling on site below). Large format floor blocks are also available which may reduce the number of beams required.

### Proven strength

Aircrete has great transverse strength. Independent testing by BBA confirms that aircrete flooring blocks will easily support the design loads, as required for domestic dwellings.

### Reliability

Using aircrete for ground floor constructions will avoid the risk of failure often associated with other forms of construction, particularly in difficult ground conditions (i.e. clay heave or shrinkage) or as a result of poor compaction of fill beneath concrete slabs.

### Protection and handling on site

Blocks should be unloaded onto a dry level surface and covered to protect them from inclement weather. After the infill blocks have been positioned, before any trafficking or loading, the floor should be grouted with a 1:4 cement/sharp sand composition to lock the blocks into position.

### Installation and accessory units

A full range of accessory units is available from APA members. Please refer to individual manufacturer's literature.

### Revolution Homes

Bottle Lane is a private custom build home designed and constructed by Revolution Homes. The four-bedroom, detached house stands on the site of the client's old property which was demolished to make way for a new more acoustically and thermally efficient build.

The entire house is constructed with 100mm, 3.6N/mm<sup>2</sup> compressive strength blocks, with a timber-cut roof and solid concrete foundation. This grade of aircrete block can be used across the entire build due to its all-round performance and versatility, eliminating any site confusion.



100mm, 3.6N/mm<sup>2</sup> compressive strength blocks are ideal for internal partition walls as they create a robust partition which contributes to overall structure rigidity. They also easily meet the sound insulation requirements of current British Regulations. The interior walls were dry-lined and plastered.

The cavity wall used contained Celotex within the 100mm cavity, 100mm wide block with a brick outer leaf. The overall wall being 300mm thick.

For the beam and block floors 100mm, 3.6N/mm<sup>2</sup> compressive strength blocks were used again. When used as floor blocks, aircrete contributes to energy conservation due to their inherent thermal properties.

The client was interested in a highly thermally efficient property which was a main reason aircrete was specified. The external walls recorded a U-Value of 0.18W/m<sup>2</sup>K.

### For more information

This publication is only intended to be an outline guide to aircrete products and you are advised to contact the APA members for comprehensive technical support and guidance, backed by extensive technical literature covering every aspect of designing and working with aircrete products.



**H+H UK Limited**  
Celcon House, Ightham  
Sevenoaks, Kent, TN15 9HZ  
www.hhcelcon.co.uk  
t: 01732 886444  
f: 01732 887013  
e: technical.services@celcon.co.uk



**Forterra Building Products**  
5 Grange Park Court  
Roman Way  
Northampton, NN4 5EA  
t: 03705 626500  
e: thermalitesales@forterra.co.uk



**Quinn Building Products**  
235 Ballyconnell Road, Derrylin,  
Co. Fermanagh Northern Ireland, BT92 9GP  
www.quinn-buildingproducts.com  
t: 02867 748866  
f: 02867 748800  
e: info@quinn-buildingproducts.com



**Thomas Armstrong (Concrete Blocks) Ltd**  
Bridge Road, Brompton-on-Swale  
Richmond, North Yorkshire, DL10 7HW  
www.thomasarmstrong.co.uk  
t: 01748 810204  
f: 01748 813950  
e: airtec@thomasarmstrong.co.uk



**Tarmac Building Products**  
i10 Building  
Railway Drive  
Wolverhampton, WV1 1LH  
www.tarmac.com  
t: 0345 606 2468  
e: blocks@tarmacbp.co.uk