

Application datasheet 3

The use of aircrete in external walls



Used for rendered or tile-hung external wall constructions, aircrete offers the labour-saving benefits of fast build whilst being one of the most cost-effective overall forms of construction using traditional skills. Easy to handle and quick to lay, aircrete's superior thermal performance in most cases minimises the need for expensive cavity insulation.

In addition, aircrete external wall constructions can achieve up to A+ in the BRE Green Guide to specification.

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, maximising BREEAM and Code for Sustainable Homes credits under Materials category.



Thermal performance

Because of their inherent insulation properties, exceptional thermal performance can be obtained when cavity or solid walls are specified using aircrete blocks.

Aircrete constructions and details achieve significant improvements in linear thermal bridging values (psi values), which become more and more dominant as fabric insulation increases. These details effectively reduce heat loss at the junctions of constructions, further reducing CO₂ emissions.

The use of aircrete construction details can result in significantly lower psi and y-values, generally half of the default values that are used in SAP assessments. Two sets of thermal bridging details are available. The first, through LABC, sets out specific thicknesses and thermal conductivity values for the materials used in the construction, optimizing the benefit of thermal bridging. The second, through Constructive Details Limited, gives a broader range of U-values and hence is slightly more flexible.

Both sets of details are available through the following links:
www.labc.co.uk/registration-schemes/construction-details

The right block

All aircrete blocks are suitable for use in external walls when used in conjunction with render or an appropriate cladding system. Most can be directly rendered, but may need a simple render reinforcement when used in certain conditions.

Increased productivity

Due to aircrete's lightweight characteristics, progress is rapid and less demanding than with denser materials. There is reduced compression of the mortar bed, so a greater number of courses can be constructed than with heavier types of masonry. This means that in its solid wall format, an extremely stable aircrete wall construction can be completed in around half the normal time. One aircrete block can cover the same area as up to twelve bricks, yet, up to a thickness of 150mm, this is still just a one-hand lift. Aircrete masonry can be constructed with traditional mortar or thin layer mortar.

Proven strength

Aircrete blocks are available in a range of strengths from 2.9N/mm² to 8.7N/mm², making them suitable for most applications.

Better by design

As with all masonry, the design should be in accordance with BS5628, PD6697 and the Eurocode 6 suite of standards. The use of traditional render on aircrete should be done in accordance with BS EN 13914-1:2016 and NHBC Standards 2017 Section 6.11. For further information or advice on the use of aircrete in external walls please refer to the Technical Design Services of APA members.



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Highly durable

British Board of Agrément accredited aircrete is resistant to moisture and rot, making its long-term performance reassuringly predictable. Its micro-cellular structure produces superior thermal properties and also gives aircrete the desired low permeability to resist water or air and ensures it is frost resistant. Below DPC where sulphate bearing soils are encountered, BBA certification confirms aircrete's suitability for sulphate classes DS1 to DS4.

External protection

Case study 1 - Carlyle Avenue, Brighton



A four unit apartment block in an in-fill site. Built using the Thin-Joint method and large format aircrete blocks.

The developer used H+H's Thin Joint system of large format aircrete blocks and quick-drying thin-layer Mortar for a four-apartment development on a confined site in Brighton.

This was the first time the contractor had used a Thin Joint system for external wall construction, although Canning Ericsson had used large format aircrete blocks for the construction of internal partitions on previous developments.

The Thin Joint system also worked well with the limited storage available on this tight site, which has been slotted into the end of the back garden of an existing home. Because of the restricted site storage, just-in-time deliveries of blocks were made by PBS, a local Aircrete stocking merchant.

In addition to the scheme's highly insulated building fabric and as part of the planning requirement photovoltaic panels were used to generate electricity from the sun on the roof of the project. This ensured one apartment achieved an EPC A rating on one apartment, with the remainder of the development achieving a B-rating.

Case study 2 - Broadmeadows

Scottish house-builders Malcolm Allen used 3.6N/mm² aircrete blocks in solid external wall constructions at their Broadmeadows development of family homes near Aberdeen. The solid wall design was chosen for its speed of build and excellent thermal insulation.

The superstructures for the 2, 3 and 4 bedroom family homes are made from 440x215x215mm 7.3N/mm² aircrete blocks joined together with traditional mortar. Malcolm Allen also used 440x215x300mm 7.3N/mm² aircrete blocks in the foundations.

Managing Director, Bert Lyon said: "We use aircrete on every build we do and Broadmeadows is a good example of why. Speed is important, and due to our experience using aircrete blocks we built two houses a week using just four staff with two apprentices."

He added: "We can build from DPC to wall head in a day, something not achievable using other methods and we can also build in inclement weather, which is particularly important in Scotland. The completed external walls for all homes at Broadmeadows are coated with dry dash roughcasting with fyfestone feature panels on some house styles. Internally, walls are finished using 100mm Kingspan insulation with 38x63mm timber posting covered with plasterboard and then a skim coat of plaster of taped finish.

Protection and handling on site

Blocks should be unloaded on to a dry, level surface and covered to protect them from inclement weather. Walls should be protected from the wind, rain and frost during the construction phase.

For more information

This publication is only intended to be an outline guide to aircrete products. You are advised to contact respective APA members for more comprehensive technical support and guidance, and 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