Application datasheet 4

The use of aircrete in solid wall construction

AIRCRETE PRODUCTS ASSOCIATION

Building with solid external walls provides a speedy form of construction that takes full advantage of aircrete's unique combination of light weight, strength and superior thermal performance. Its use fully complies with current Building Regulations, is cost-effective and accommodates a range of external finishing solutions that makes it ideal for domestic, commercial or industrial applications.

Rapid build times

Single leaf, solid wall construction, combined with aircrete's ease of handling enables more rapid build to eaves level, allowing earlier completion of the roof. This in turn allows early access to finishing trades, resulting in a significant reduction in overall completion times. Build time is further improved when used in conjunction with thin layer mortar systems – an innovative aircrete development that significantly reduces construction times, improves thermal performance, airtightness and the risk of moisture ingress (For further information please see - Thin joint blockwork datasheet).

A choice of finishes

Aircrete solid walls open up a wide range of finishing options, and can even reduce dependence on traditional wet trades. Tile hanging gives an equally attractive alternative to brickwork, with battens affixed easily and quickly to the aircrete substrate. Other external finishes include timber cladding, brick slip systems, external insulation and rendering options.

Excellent thermal performance

Aircrete is an intrinsically efficient insulation material and the popularity of solid wall aircrete construction in Scandinavia and across Europe, is large due to the excellent thermal performance that can be achieved.

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 less at the junctions of constructions, further reducing CO_2 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
www.constructivedetails.co.uk/resources/

Save time and costs

The absence of a cavity eliminates the need for other products and processes, saving on labour and material costs and reducing the risks of failure and moisture penetration through the cavity. Solid wall construction is also associated with low on-site wastage.

High frost and moisture resistance

Aircrete is highly resistant to frost damage and freeze-thaw tests show no strength reduction under these conditions. The natural integrity of aircrete's closed cell construction resists the passage of water and forms an effective barrier against moisture penetration.

Sound insulation

Aircrete external solid walls can be used in conjunction with aircrete separating walls but sound insulation testing of the separating walls would need carrying out.

A strong and durable solution

Solid wall aircrete is available in different strengths to suit different applications, from 2.9N/mm^2 – suitable for most domestic applications – through to 7.3N/mm^2 or higher for taller buildings subject to high vertical and/or wind loading. Being resistant to rot, fungal, insect and sulphate attack, aircrete's long-term durability is reassuringly predictable.

Application datasheet 4

The use of aircrete in solid wall construction

AIRCRETE PRODUCTS ASSOCIATION

Case study - Stondonfield

The Stondonfield social housing development is made up of a mix of houses and flats, all now successfully allocated to tenants.

The ground floor external solid walls are built with thin-jointed 7.3N/mm^2 large format blocks finished with either a timber board finish on 25x50 TSW battens or rendered with a through coloured white External Wall Insulation system.

Insulation above ground is 100mm thick board. The external walls are finished internally with a dry-lining system with other internal walls using 12.5mm thick plasterboard also on dabs. U-values achieved for the external walls were 0.14W/m^{2}K

All house foundations consist of 140mm Foundation Blocks on top of a concrete slab and insulation below ground level is Rocksilk DriTherm Cavity Slab.

All of the homes had to be built to level 4 of the Code for Sustainable Homes. This meant thermal and air tightness qualities of the build method would have to be excellent. Robustness was another important consideration as was acoustic performance and speed of build.

Stondonfield was originally specified to use a 140mm timber frame wall system. However, bearing in mind the construction requirements, thin joint aircrete construction was then chosen, whilst still continuing with the original 140mm thickness of wall construction due to aircrete's diverse application and insulation properties.

Air pressure testing produced results of 3.6 for the houses and 1.9 for the flats and acoustic test results proved how effective solid wall aircrete construction is at reducing sound travel.

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 can perform to meet current Building Regulations and can be used to build Zero Carbon Homes.

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 above level.

Site practice

Blocks should be unloaded on to a dry, level surface, and should be covered to protect them from inclement weather conditions. Blocks that have become wet should be allowed to dry out before use.

For more information

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

H+H

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

THERMALITE a Forterra brand

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

QUINN BUILDING PRODUCTS

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

AIRTEC

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 A CRH COMPANY

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