

The Guide to



THIN JOINT SYSTEM

The traditional cavity masonry accounts for the vast majority of the external walls in the UK. However, the masonry wall can be built as a thin joint construction which replaces conventional 10 mm cement-sand mortar joints with a 2-3 mm adhesive mortar joint. The specially formulated adhesive (fast setting mortar) sets out quickly and allows to speed up the process of wall building, thus saving the labour costs.

The thin joint method of wall construction not only speed up the process but also narrow the width of the wall. The thin joint system is categorised as one of the building approaches included in the modern methods of construction.

Thin joint technology allows for reduction of the potential heat losses by using a special fast setting adhesive mortar instead of traditional mortar. The specially designated adhesive mortar is packed in bags and mixed on site with water. It is applied using a special trowel that enables it to be spread on the block unit at the correct thickness of just 2-3mm.

The thin joint construction is getting more popular in the UK due to the availability of aircrete blocks which have the certain advantages over the traditionally built walls. Thin joint construction is not new in the UK for instance, Tarmac Durox products are available on the market from 2008. The Wainerberger's Porotherm is an innovative solution of clay blocks with an interlocking system so no mortar is required on the vertical joint. Recently, the more demanding building regulation and focus on sustainability makes thin joint the highly effective building method, which allows to minimise the CO2 emissions and optimise the thermal insulation of the building. IBB Polish Building Wholesale stocks YTONG aircrete products which description is included in this month's materials comparison section.

The thin joint system and aircrete products are the perfect choices if builders aim to reduce the U-values and meet the new Code for Sus-

tainable Homes (CSH) requirements. U-values measure the heat loss, for instance through the walls so the lower U-value, the better thermal performance. The exceptional features of aircrete blocks make them ideal to meet Code Level 3, which is a new requirement in local authorities, so the building will not exceed current Part L of the Building Regulations by 25%. However, improving U-values might also require the enhancement to the heating, ventilation, energy efficiency lighting, airtightness, etc.

Benefits:

- quicker to lay
- quicker coverage
- better insulation properties
- sustainable
- recyclable
- better airtightness
- greater thermal performance
- fast setting adhesive
- highly accurate dimensions
- improved build accuracy
- ease to extend or alter

Aircrete systems provide the complete building material which can be used throughout the whole building from foundations to roofs. The aircrete products can be used to build solid foundations, beam and block floors, solid wall construction, separating and flanking walls, partition walls and external cavity walls, fire walls or infill to steel and concrete frame. Applications allow for a variety of finishes- brick, render, metal cladding etc.

Benefits of fast setting mortar:

- increased bond
- no mortar swimming
- ease of mixing and application
- ease of preparing small quantities

Where to use Thin Joint System

Below DPC - below DPC aircrete blockwork can be used with either traditional mortar or quick setting mortar (adhesive).

External Solid Walls - aircrete blockwork with thin layer of fast setting mortar (adhesive) improve U-values when compared to conventional joints in solid external walls. External finishes may include external render, cladding, tiles or bricks. Internal finishes may include drylining and plasters. Mortar can be applied with either a scoop or with a sledge designed to use with solid wall construction.

External Cavity Walls - aircrete can be used for the load-bearing inner leaf with the selection of strengths. It enables an easy inspection of the cavity and allows the internal works to proceed while the outer leaf is being constructed.

Partitions and separating walls - aircrete products are perfectly suited for partition walls with high sound insulation and fire or thermal resistance. Aircrete block partitions speed up the process of building the portion wall and allows the variety of finish application's choice. The aircrete system satisfy the sound insulation requirements of the building regulations.

Applications:

- Cavity walls (internal and external leaf)
- Solid walls
- Partition walls
- Separating walls
- Flanking walls
- Multi-storey buildings

Foundations - aircrete system allows the construction of foundations according to the building regulations requirements.

Extensions - solid, cavity walls, partitions walls and foundation- the aircrete system allows the complete extension construction, enabling faster construction process, increased thermal insulation, sound insulation and reduced wastage.

Characteristics of aircrete products:

- strong
- excellent thermal insulation and improved thermal performance
- thermal mass
- excellent airtightness
- sound insulation
- fireproof
- durable
- eco-friendly
- sustainable
- lightweight
- versatile
- easy to handle
- reduce labour time
- reduce waste
- recyclable
- used to lower U-values in walls
- materials are more expensive but it is offset by cheaper labour costs





Building

with The Thin-Joint System

It is highly recommended to start the construction of the inner leaf first. This allows to create the water tight environment and enables to follow with other building works as per schedule. The blockwork can be finished off within the first 1-2 days so the scaffolding or lintels and steel should be supplied on site before the blockwork works starts.

STEP 1

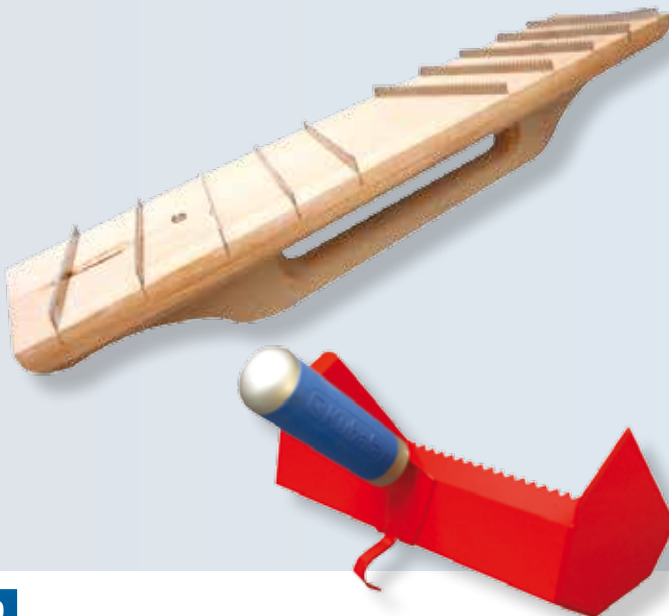
First part of blockwork should be laid with the traditional mortar which accommodates all irregularities in the supporting structure and to include DPC, while the rest can be followed with the fast setting adhesive mortar.



STEP 2

The prepped joints should be filled with the fast setting mortar (for instance Atlas Silmur) to allow the more rigid base. It is important to lay blocks accurately, properly levelled (+/- 1mm) and vertical.

The dry and pre-mixed fast setting adhesive should be mixed with water in a bucket- please follow the instruction given on the bag. Mixing can be done with the power tool at the low speed and the thick smooth consistency is required. Such prepared adhesive mortar should be applied with cellular trowel and cellular scrubber to provide the consistent mortar thickness.



STEP 3

If any irregularities occurs on the the first course, all should be sanded down using a sanding board. Joints should be cleaned from dust using a stiff brush.

STEP 4



The following courses of blockwork should be pressed firmly against the mortared vertical face ensuring that the joints are fully filled. Blocks can be cut with hand or electric tools, for instance hand saw or a cutting square, or electrical saw or circular saws. Wall ties are used for cavity wall construction. Openings around windows and doors can be formed with cut blocks with lintel bearings cut to suit. All types of lintels can be used.

Providing the first course of aircrete blockwork was properly build the following parts can be continually laid with no need to wait for mortar to set, what allows the building structure to be finished within 2-3 days.



Prevention of cold bridging

The recent energy efficiency regulations like for instance Part L, suggest way of designing junctions to minimise air leakage and cold bridging. Energy assessors calculate the thermal bridge values (psi values) and enters them into the overall heat loss calculations, with details like the insulation and the heating system.

Cold Bridging is the gap in the insulation which occurs when there is a break of continuity of insulation, for instance in junctions between walls and floors, around windows and doors, steel wall ties in wall construction, studwork in timber frame walls, holes made by pipes and cables. Airtightness and

cold bridging is the relevant matter for energy efficiency. Elimination of heat loss is the important matter.

A wall tie is the construction element that conducts heat and the significant heat losses occur in the place where ties are installed. A range of non-steel wall ties are designed to reduce the cold bridging effect.

Movement control

External walls should normally be bonded at corners or returns unless a movement joint is required (for instance, where sections of wall are built up from different types of foundation). As with

all masonry walls, the accommodation of drying, shrinkage and movement should be considered at the design stage. The strength of mortar is a contributory factor for an excessive movement so it is often advised to incorporate the anti crack mesh or reinforcement in blockwork. Other recommendations include:

- separation of panels with movement joints at no more than 6cm
- first movement joint should be positioned within 3m of a corner
- a movement joint should be installed where blockwork abuts other structural elements like concrete or steel