Masonry Cavity Walls: Residential

Warmth

Quietness

Protection

Conservation

Masonry Cavity Walls: Residential

Building, Residential

External Walls

knaufinsulation
Masonry cavity walls have been popular in the UK since the 1920’s. This method of external wall construction is simple and traditional, whilst allowing great scope for flexibility in design.

The adaptability of cavity walls has led to a significant evolution from their beginnings with two skins of masonry and an empty cavity, a form of construction offering minimal thermal properties. In contrast, the full and part fill systems used today provide exceptional thermal performance and energy efficiency.

Overview
Advantages

Insulated masonry cavity walls can offer excellent thermal performance when the cavity is utilised as an insulation zone.

Masonry cavity is the most widely used form of wall construction in the UK and Ireland. The cavity wall benefits from several features that account for its popularity with designers, developers and builders:

- Existing empty cavities can be upgraded with retrofit injected cavity wall insulation.
- Flexibility of design, allowing the designer to meet the requirements of clients with widely available materials.
- A wide range of U-values can be achieved and performance tailored to specific Building Regulation requirements.
- Cost effective.
- Traditional method of construction that is understood throughout the industry.

Knauf Insulation Products

- **Crown DriTherm Cavity Slab** is a lightweight, semi-rigid or rigid slab of glass mineral wool with a water-repellent additive. It is dimensioned to fit between wall ties at standard spacings.
- **Crown DriTherm Cavity Slab Plus** has a superior thermal resistance to Crown DriTherm Cavity Slab.
- **Crown DriTherm Cavity Slab 32 and 34** are denser slabs with improved thermal conductivities of 0.032 and 0.034 W/mK respectively.
- **Crown Supafil Cavity Wall Insulation** is a loose glass mineral wool insulation material which is injected into existing or newly-built cavity walls. It requires no mixing on site and is dry when installed, adding no water to the building.
- **Polyfoam Cavityboard** is a high performance, 100% ozone friendly, extruded polystyrene, rigid board insulation. It is lightweight, yet has excellent rigidity and long term effectiveness, even when exposed to moisture.
- **Polyfoam System Closer** comprises Polyfoam high performance, 100% ozone friendly, extruded polystyrene, rigid board insulation semi-enclosed in a rigid PVC casing.
- **Polyfoam Combi Closer** is a variant of System Closer, dimensioned to fit a range of cavity widths.
- **Polyfoam Linerboard** is a laminate of Polyfoam high performance, 100% ozone friendly, extruded polystyrene, rigid board insulation and tapered edge plasterboard.
- **Rocksilk DriTherm Cavity Slab** is a medium density, water-repellent slab. It is dimensioned to fit between wall ties at standard spacings.
Summary

Knauf Insulation provides products for a range of masonry cavity wall systems, giving options that will comply with the Building Regulations and meet the preferred method of construction and required level of thermal performance.

<table>
<thead>
<tr>
<th>System</th>
<th>1) Part Cavity Fill</th>
<th>2) Full Fill: Injected Crown Supafil</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Crown DriTherm Cavity Slab and Polyfoam Cavityboard</td>
<td>Crown Supafil</td>
</tr>
<tr>
<td>Advantages</td>
<td>• Meets NHBC requirements for all exposure zones  • Retains a 50mm residual cavity  • Both products create a positive joint  • DriTherm guarantee available  • DriTherm is fire class A1 – non-combustible</td>
<td>• Installed by approved contractor  • Low cost  • 25 year Knauf new build guarantee available</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Insulation type</th>
<th>50mm Crown DriTherm Cavity Slab 32</th>
<th>50mm Polyfoam Cavityboard</th>
<th>75mm Polyfoam Cavityboard</th>
<th>85mm Crown Supafil</th>
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</thead>
<tbody>
<tr>
<td>U-value</td>
<td>0.25</td>
<td>0.30</td>
<td>0.35</td>
<td>0.30-0.37</td>
</tr>
<tr>
<td></td>
<td>0.34</td>
<td>0.32-0.40</td>
<td>0.25-0.30</td>
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</tr>
</tbody>
</table>

The U-Values illustrate the performance range of each insulation system when used with 100mm thick blockwork varying from lightweight aircrete to dense concrete (unless noted). The internal lining is always 12.5mm plasterboard on dabs, creating a 15mm airspace. Outer cladding is 102.5mm brick.
### 3) Full fill: Built-in Crown DriTherm Cavity Slab and Rocksilk DriTherm Cavity Slab

<table>
<thead>
<tr>
<th>100mm Crown Supafil</th>
<th>85mm Crown DriTherm Cavity Slab or Rocksilk DriTherm Cavity Slab</th>
<th>100mm Rocksilk DriTherm Cavity Slab or Crown DriTherm Cavity Slab</th>
<th>100mm Crown DriTherm Cavity Slab 32</th>
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<tbody>
<tr>
<td>Good</td>
<td>Better</td>
<td>Best</td>
<td>Good</td>
</tr>
<tr>
<td>CIGA guarantee available for existing buildings</td>
<td>Lowest system width</td>
<td>No fire stopping required in cavity</td>
<td>No fire stopping required in cavity</td>
</tr>
<tr>
<td>Low cost</td>
<td>Guarantee available</td>
<td>Low cost</td>
<td>Guarantee available</td>
</tr>
<tr>
<td>DriTherm is fire class A1 – non-combustible</td>
<td>CIGA guarantee available for existing buildings</td>
<td>Guarantee available</td>
<td>CIGA guarantee available for existing buildings</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>330mm</th>
<th>310mm</th>
<th>325mm</th>
<th>325mm</th>
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</thead>
<tbody>
<tr>
<td>0.27-0.33</td>
<td>0.28-0.35</td>
<td>0.23-0.27</td>
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<tr>
<td>0.28-0.35</td>
<td>0.23-0.27</td>
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<td>0.25-0.30</td>
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<td>0.23-0.27</td>
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</table>

<table>
<thead>
<tr>
<th>18-19</th>
<th>20-26</th>
<th>20-26</th>
<th>20-26</th>
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<tbody>
<tr>
<td><a href="http://www.knaufinsulation.co.uk">www.knaufinsulation.co.uk</a></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>
Building Regulations

The maximum allowable Elemental U-values for external walls are shown below:

<table>
<thead>
<tr>
<th>Location</th>
<th>U-value (W/m²K)</th>
</tr>
</thead>
<tbody>
<tr>
<td>England, Wales and Northern Ireland</td>
<td>0.35</td>
</tr>
<tr>
<td>Scotland</td>
<td>0.30 or 0.27</td>
</tr>
<tr>
<td>Ireland</td>
<td>0.27</td>
</tr>
</tbody>
</table>

In the various Building Regulations there are trade off methods that allow the performance of a particular building element to be worse than the Elemental U-value. This has to be compensated for either by improving the performance in other building elements, or the heating system performance. There is usually a maximum permissible U-value for each element in the trade off methods.

Thermal Bridging at Junctions and Openings

With improving U-values for walls and other elements, it has become necessary to ensure that no cold bridges exist at junctions and openings. In England and Wales special robust details have been issued for housing. If these details are not suitable, the designer may use other approved details or calculate heat loss through the cold bridges.

The details at the top of page 7 demonstrate the methods prescribed by the published robust construction details for four applications in masonry cavity walls. A full set of details is available in the document “Limiting thermal bridging and air leakage: Robust construction details for dwellings and similar buildings” published by the TSO.

Wall Ties

Apart from structural considerations, which are obviously pre-eminent, the correct specification of wall ties is crucial in two additional respects. Firstly, it is necessary that the tie does not compromise performance of the cavity wall insulation with regard to liquid water penetration.

Secondly, that the U-value calculation method takes into consideration the
number of wall ties per square metre as well as the cross sectional area, and thermal performance of the tie. Where cavities are 100mm or less, stainless steel wire ties are recommended as they have negligible effect on the wall U-value. Where the cavity is over 100mm wide, a more robust tie is required, which can have a significant effect on the wall U-value.

**Masonry Cavity Walls and Fire Performance**

Open cavities must be stopped to prevent the passage of fire. This is required at specific intervals and the cavity stop has to provide at least 30 minutes fire resistance. If the cavity is fully or partially filled and is built in accordance with Diagram 32 of Approved Document B, fire barriers are not required.

**Prevention of Liquid Water Penetration**

Prevention of liquid water penetration from the outer to inner leaf is one of the major considerations when designing cavity walls. The selection of appropriate materials and pointing methods for the outer leaf are crucial.

**Cavity Trays**

Cavity trays should be provided:
- at all interruptions of the cavity, such as lintels and sleeved vents and ducts
- above insulation that stops short of the top of the wall

Cavity trays should rise at least 140mm within the cavity, be self-supporting or fully supported with joints lapped and sealed. Stop ends should be provided to the ends of all cavity trays. Weepholes should be provided at not more than 900mm centres to drain each cavity tray.

**Condensation Risk**

In cavity wall construction it is necessary to ensure that there is no danger of condensation forming within the inner leaf. Condensation may have a detrimental effect on the thermal performance of a structure or cause damp on the inside. Unfaced mineral wool products, being ‘vapour open’ offer virtually no resistance to the passage of water vapour.

The Knauf Insulation Academy Technical Advisory Service are able to carry out condensation risk calculations if further reassurance is required.
The recommended masonry cavity wall system is full fill, either injected (Supafil) or built in slabs (the range of Crown DriTherm Cavity Slabs or Rocksilk DriTherm Cavity Slab).

These systems not only provide the best U-value to wall width ratio but are also the lowest in cost. Even with dense concrete blocks it is possible to achieve very high thermal performance in a manageable wall width. The systems shown require no fire stopping and have British Board of Agrément Certificate clearance to the same height as partial fill systems. With formal guarantees against liquid water penetration and a long history of use in housing construction, they offer peace of mind for the specifier, builder and client alike.

If it is not possible to fully fill a cavity owing to insurance/guarantee company restrictions, the recommended system is Polyfoam Cavityboard. The robust nature of Polyfoam Cavityboard allows the formation of a shiplap detail on all edges of the board, offering a further guarantee against water penetration and cold bridging that might occur with plain square edge cellular plastic boards.

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**Three methods for insulating masonry cavity walls**

1) **Partial fill**
   - External brick outer leaf
   - Crown DriTherm Cavity Slab (including Plus, 34 and 32), or Polyfoam Cavityboard
   - Blockwork inner leaf
   - Wall tie with retaining disk
   - Plasterboard on dabs

2) **Full fill: injected**
   - External brick outer leaf
   - Crown Supafil
   - Blockwork inner leaf
   - Plasterboard on dabs

3) **Full fill: built-in**
   - External brick outer leaf
   - Crown DriTherm Cavity Slab (including Plus, 34 and 32), or Rocksilk DriTherm Cavity Slab
   - Blockwork inner leaf
   - Plasterboard on dabs
Insulated reveal

1. Blackwork inner leaf
2. Polyfoam Cavityboard
3. Clear cavity
4. Polyfoam System Closer or Polyfoam Combi Closer
5. Plaster finish covers Polyfoam Cavity Closer
6. Flexible strip to closer acts as backing to sealant

Advantages
- Easily meets Building Regulation requirements
- Robust product
- Offcuts can be utilised

Products
- Polyfoam System Closer comprises Polyfoam high performance, 100% ozone friendly, extruded polystyrene, rigid board insulation semi-enclosed in a rigid PVC casing.
- Polyfoam Combi Closer is a variant of System Closer, dimensioned to fit a range of cavity widths.

Typical Construction
Polyfoam System Closer and Polyfoam Combi Closer are located between inner and outer leafs of masonry cavity walls at window and door openings in place of the traditional blockwork return. The Polyfoam closers fully fill the cavity and provide a damp proof barrier between the inner and outer leaves. The casing and the Polyfoam core are both highly moisture resistant. The casing has a flexible strip attached to fit into the rear of door and window frames to act as an extra damp-proof seal.

Polyfoam System Closer is available in standard sizes to suit 50, 65, 75, 85 and 100mm cavity widths.

Polyfoam Combi-Closer is available in 75 and 100mm and can be adjusted on site to fit a range of cavity widths.

Performance
- Thermal performance
Polyfoam System Closer and Polyfoam Combi Closer have aged quoted thermal conductivity of 0.030 W/mK and can easily achieve the requirements of the Building Regulations for preventing thermal bridging at openings.

- Fire performance
Polyfoam System Closer and Polyfoam Combi Closer contain a flame retardant to inhibit localised ignition. When contained within a cavity wall behind a plaster or similar finish they will not prejudice the fire resistance of the wall.

Installation
The closers are simply cut to length with a normal hand saw. Care should be taken to ensure a tight fit. The jamb closer should overlap the sill closer and butt up to the underside of the insulated lintel.

Any offcuts can be utilised by simply pushing the insulating foam core upwards so that it protrudes from the end of the plastic casing. The casing of another piece is then slid over the insulating core, joining the two pieces together.

The ties, if used, are installed at 500mm centres and built in as work proceeds. Alternatively, the flanges of the closer can be nailed in position at about 450mm centres.
Partial cavity fill: Crown DriTherm

1) Brick outer leaf
2) Wall tie with retaining disk
3) Crown DriTherm Cavity Slab partially filling the cavity
4) Blockwork inner leaf
5) Plasterboard on dabs

Products

- Crown DriTherm Cavity Slab is a semi-rigid or rigid slab of glass mineral wool with a water-repellent additive. It is dimensioned to fit between wall ties at standard spacings.
- Crown DriTherm Cavity Slab Plus and Crown DriTherm Cavity Slab 34 and 32 have superior thermal performance to Crown DriTherm Cavity Slab.
- Polyfoam System Closer and Polyfoam Combi Closer comprise high performance, 100% ozone friendly, extruded polystyrene, rigid board insulation semi-enclosed in a rigid PVC casing.
- Polyfoam Combi Closer is a variant of System Closer, dimensioned to fit a range of cavity widths.

Typical Construction

Brick or block outer leaf (which may be rendered), brick or block inner leaf with cavity partially filled with Crown DriTherm Cavity Slab. Internal finish of plasterboard on dabs.

BBA approval means that in many instances a minimum 25mm residual cavity needs to be maintained. In more exposed areas, buildings over 12m in height and for dwellings subject to NHBC inspection, a 50mm residual cavity should be maintained.

Guarantee

All Crown DriTherm Cavity Slab products are formally guaranteed for 50 years to resist the transmission of liquid water from the outer masonry leaf to the inner masonry leaf in new external cavity walls and to have a thermal conductivity of 0.032 to 0.037 W/mK at normal building temperatures. Masonry includes bricks, blocks and dressed and reconstituted stone. The guarantee is available by application from Knauf Insulation.
Typical U-values (W/m²K) for masonry cavity walls partially insulated with Crown DiTherm Cavity Slab

<table>
<thead>
<tr>
<th>Insulation thickness (mm)</th>
<th>Dense block (λ=1.13)</th>
<th>Medium block (λ=0.51)</th>
<th>Lightweight aggregate (λ=0.34)</th>
<th>Standard aircrete (λ=0.16)</th>
<th>Lightweight aircrete (λ=0.11)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Crown DiTherm Cavity Slab</strong></td>
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<td></td>
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<tr>
<td>100</td>
<td>0.29</td>
<td>0.28</td>
<td>0.27</td>
<td>0.26</td>
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</tr>
<tr>
<td>85</td>
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<td>0.32</td>
<td>0.31</td>
<td>0.29</td>
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<tr>
<td>75</td>
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<td>0.31</td>
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<tr>
<td><strong>Crown DiTherm Cavity Slab Plus</strong></td>
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<tr>
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<tr>
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<td>0.31</td>
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<tr>
<td>50</td>
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<td>0.43</td>
<td>0.41</td>
<td>0.37</td>
<td>0.35</td>
</tr>
<tr>
<td><strong>Crown DiTherm Cavity Slab 32</strong></td>
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<tr>
<td>100</td>
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<td>0.41</td>
<td>0.40</td>
<td>0.36</td>
<td>0.34</td>
</tr>
</tbody>
</table>

Notes: The U-values have been calculated assuming that all walls are lined with plasterboard on slabs. Block sizes assumed to be 440 x 215mm, mortar joints assumed to be 10mm wide, wall ties assumed to be stainless steel with a cross-sectional area of 12.5mm² for 100mm wide structural cavities and Ancon ST1 ties for larger cavities. The U-values have been calculated to BS EN ISO 6946: 1997.

Performance
- **Thermal performance**
  Crown DiTherm Cavity Slab has a thermal conductivity between 0.035 and 0.037 W/m²K depending on thickness.
  Crown DiTherm Cavity Slab Plus has a thermal conductivity of 0.036 W/m²K.
  Crown DiTherm Cavity Slab 34 has a thermal conductivity of 0.034 W/m²K.
  Crown DiTherm Cavity Slab 32 has a thermal conductivity of 0.032 W/m²K.

- **Fire performance**
  The range of Crown DiTherm Cavity Slabs are classified as Euroclass A1 to BS EN ISO 13501-1.

- **Moisture resistance**
  The range of Crown DiTherm Cavity Slabs contain a water-repellent silicone additive to ensure that no liquid water is able to pass through the slab and reach the inner leaf of masonry.
  Tests by the British Board of Agrément confirm that the range of Crown DiTherm Cavity Slabs will not transmit water to the inner leaf. Nor will they transmit moisture by capillary action across the cavity or from below DPC level.

- **Vapour resistance**
  The range of Crown DiTherm Cavity Slabs offer virtually no vapour resistance, allowing water vapour to pass freely through the slab.

System Advantages
- Retains minimum 25mm clear cavity
- Can be used in any exposure zone
- Lowest cost partial fill solution
- Compression fit between slabs preventing any water penetration at joints
- Built-in during construction
- Low embodied energy product
- No foil facings

Certification
The full range of Crown DiTherm Cavity Slabs are third party certified by the British Board of Agrément.

See pages 27 and 28 for standard specification clauses.
Crown DriTherm Cavity Slab is designed to be installed using proprietary insulation retaining wall ties and clips. The wall ties should be placed with a drip in the centre of the clear cavity. Advice should also be sought from manufacturers as to the maximum cavity width for which the use of a specific tie is approved.

The first course of Crown DriTherm Cavity Slab should be fully supported either on wall ties at approximately 600mm horizontal spacing or on the weak concrete at the foot of the cavity, or on a cavity tray.

Start the wall insulation at least 150mm below top of perimeter floor insulation and support on row of wall ties. Crown DriTherm Cavity Slab does not wick.

Construction practice will vary from site to site. Where design details differ from those illustrated please do not hesitate to contact Knauf Insulation for any clarification required.

Installation Sequence

1. A section of the inner leaf is built to a course above the next row of wall ties. Mortar squeeze is removed from the inside of the first leaf.

2. The remaining leaf is then built up to the top level of the insulation ensuring that the designed residual cavity is maintained. The residual cavity should be at least 25mm wide. A 50mm wide residual cavity is required in more exposed areas, buildings over 12m in height and for dwellings covered by the NHBC. The cavity must always be kept clear of mortar droppings. The use of cavity battens and boards is recommended.

3. Repeat this process up to the top of all walls, or the underside of a cavity tray. The top of all cavities should be closed with a non-combustible board (such as 9mm calcium silicate board) or proprietary non-combustible cavity closer.

Installation

Any thickness of Crown DriTherm Cavity Slab may be used in partial fill applications.

During installation all joints should be closely butted and kept clean and free from mortar droppings. Any cutting and fitting should be neatly done and not distort the layers of glass wool which comprise the material.

Crown DriTherm Cavity Slab is supplied in 1200 x 455mm slabs for use between wall ties at 450mm vertical centres. When off-cuts are needed, the slabs can be cut with a long bladed knife or bricklayer’s trowel.

Construction practice will vary from site to site. Where design details differ from those illustrated please do not hesitate to contact Knauf Insulation for any clarification required.

Wall Ties & Fixing Devices

Crown DriTherm Cavity Slab is designed to be installed using proprietary insulation retaining wall ties and clips. The wall ties should be placed with a drip in the centre of the clear cavity.

Advice should also be sought from manufacturers as to the maximum cavity width for which the use of a specific tie is approved.

Generally rows of wall ties should be at 450mm vertical spacing and at horizontal spacings of not more than 600mm as required by the structure. Where whole rows of ties are at different vertical spacing, Crown DriTherm Cavity Slab should be cut to course, allowing an extra 5mm for compression to form close butt joints. Where extra ties are required, for example beside openings, Crown DriTherm Cavity Slab should be cut and fitted carefully around them.
4. As an alternative to the retaining wall tie and disk, insulation retaining clips can be used to hold the slab in place. These clips penetrate the Crown DriTherm Cavity Slab and are pushed into the joints of green mortar. This type of clip may also be used where it is not possible to secure the insulation in place with wall ties, for example below sills or eaves. The clips should be fixed at horizontal spacings of 400mm.

Wall Tie Manufacturers

The following manufacturers can supply stainless steel wall ties:

- Ancon Building Products
  www.ancon.co.uk  t 0114 275 5224
- Catnic Profiles
  www.catnic.com  t 01222 853800
- Ensor Metal Products
  www.ensormetal.co.uk  t 0161 427 2746
- Helifix Ltd
  www.helifix.co.uk  t 0800 731 7732
- The Stainless Wire Tie Co
  www.wincro.com  t 0114-261 9966
Partial cavity fill: Polyfoam Cavityboard

1. Brick outer leaf
2. Wall tie with retaining disk
3. Polyfoam Cavityboard partially filling the cavity
4. Blockwork inner leaf
5. Plasterboard on dabs or Polyfoam Linerboard

Products
- Polyfoam Cavityboard is a high performance, 100% ozone friendly, extruded polystyrene, rigid board insulation. It is lightweight, yet has excellent rigidity and long term effectiveness, even when exposed to moisture.
- Polyfoam Linerboard is a laminate of Polyfoam high performance, 100% ozone friendly, extruded polystyrene, rigid board insulation and tapered edge plasterboard.
- Polyfoam System Closer comprises Polyfoam high performance, 100% ozone friendly, extruded polystyrene, rigid board insulation semi-enclosed in a rigid PVC casing.
- Polyfoam Combi Closer is a variant of System Closer, dimensioned to fit a range of cavity widths.

Typical Construction
Brick or block outer leaf (which may be rendered), cavity, Polyfoam Cavityboard, block inner leaf. Internal finish of plasterboard on dabs or an insulated dry lining.

BBA approval means that in many instances only a minimum 25mm residual cavity needs to be maintained. In more exposed areas, buildings over 12m in height and for dwellings subject to NHBC inspection, a 50mm residual cavity should be maintained.

System Advantages
- Very robust product
- Shiplap joints between boards sheds any water in the cavity away from the inner leaf
- Retains clear cavity
- Completely unaffected by moisture
- No foil facings
Typical U-values (W/m²K) of masonry cavity walls insulated with Polyfoam Cavityboard

<table>
<thead>
<tr>
<th>Polyfoam Cavityboard thickness (mm)</th>
<th>Brick outer leaf/cavity/100mm block inner leaf, plasterboard on dabs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Dense block (λ=1.13)</td>
</tr>
<tr>
<td>Internal finish of plasterboard on dabs</td>
<td></td>
</tr>
<tr>
<td>75</td>
<td>0.30</td>
</tr>
<tr>
<td>60</td>
<td>0.36</td>
</tr>
<tr>
<td>50</td>
<td>0.40</td>
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<tr>
<td>40</td>
<td>0.47</td>
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<tr>
<td>35</td>
<td>0.51</td>
</tr>
<tr>
<td>30</td>
<td>0.56</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Internal finish of 17.5/9.5mm Polyfoam Linerboard</th>
</tr>
</thead>
<tbody>
<tr>
<td>75</td>
</tr>
<tr>
<td>60</td>
</tr>
<tr>
<td>50</td>
</tr>
<tr>
<td>40</td>
</tr>
<tr>
<td>35</td>
</tr>
<tr>
<td>30</td>
</tr>
<tr>
<td>25</td>
</tr>
</tbody>
</table>

Note: Block sizes assumed to be 440 x 215mm, mortar joints assumed to be 10mm, wall ties assumed to be stainless steel with a cross-sectional area of 12.5mm². The U-values have been calculated to BS EN ISO 6946:1997.

Performance

- **Compression resistance**
  The rigidity of Polyfoam Cavityboard makes the board easy to handle and less prone to site damage than less robust materials.

- **Moisture resistance**
  The boards are resistant to moisture absorption and can be laid in ground water or up against wet concrete with negligible impact on the performance of the product. The interlocking rebated edge sheds any water into the cavity away from the inner leaf in the unlikely event that it penetrates the face joint between two boards.

- **Thermal performance**
  Polyfoam Cavityboard is a high performance insulant, with aged quoted thermal conductivity of 0.029 W/mK to BS EN 13164. The conductivity value is virtually unaffected by moisture on site.

- **Fire performance**
  Polyfoam Cavityboard contains a flame retardant to inhibit localised ignition. The use of Polyfoam Cavityboard will not prejudice the fire resistance of the wall.

Certification

Polyfoam Cavityboard is third party certified by the British Board of Agrément.

See pages 27 and 28 for standard specification clauses.
1. Bring the first leaf to the level of the first row of wall ties and remove any excess mortar.

2. Trim the bottom of the board to fit the space between the bottom of the cavity and the first row of wall ties. Fit the board so that the shiplap joint will shed water away from the inner leaf. Cut small notches in the upper edge of the Polyfoam Cavityboard to accommodate the wall ties.

3. Build the second leaf up to the level of the insulation board. Adjust retainers so that the board is held firmly against the inner leaf. Do not let the second leaf overtake the Polyfoam Cavityboard so as to create a trough.

**Installation**

Polyfoam Cavityboard is supplied in 1200 x 450mm boards.

Wall ties with insulation retaining clips must be used. Normally ties are spaced at 450mm vertical centres. Horizontal centres vary according to the width of the cavity and the type of tie used but should not be more than 900mm. Manufacturer’s recommendations must be followed.

Construction practice will vary from site to site. Where design details differ from those illustrated please do not hesitate to contact Knauf Insulation for any clarification required.

Polyfoam Cavityboard should be cut and fitted carefully around openings and to suit wall lengths. The boards can be cut with a long bladed knife, saw or bricklayer’s trowel.

Avoid thermal bridges by taking the Polyfoam Cavityboard to the back of frames, sills and cavity closers. Also, ensure the wall insulation starts at least 150mm below the top of the perimeter floor insulation and is supported on ties (as shown in step 2).
4. Build up the first leaf a further 450mm, clean off any excess mortar and fit the second row of boards. The vertical joints should be staggered so that they do not line up with the joint in the board below. Ensure that the board is tightly fitted against the row of boards below. There should be at least four retainers per board.

5. Raise the second leaf to the level of the first and repeat previous sequence to completion. As with normal masonry cavity construction, no mortar should remain in the cavity. Particular care should be taken to keep board joints tightly butted and free from mortar. To facilitate keeping the top edges of insulation clean it is recommended that a cavity batten and board be used.
Full fill: injected

1. Brickwork outer leaf
2. Crown Supafil
3. Suitable wall tie
4. Blockwork inner leaf
5. Plasterboard on dabs

Products
- Crown Supafil Cavity Wall Insulation is a loose glass mineral wool insulation material which is injected into existing or newly-built cavity walls. It requires no mixing on site and is dry when installed, adding no water to the building. Crown Supafil Cavity Wall Insulation is available only through approved installers fully trained by Knauf Insulation and approved by the British Board of Agrément. A list of Approved Installers is available on request.
- Polyfoam System Closer comprises Polyfoam high performance, 100% ozone friendly, extruded polystyrene, rigid board insulation semi-enclosed in a rigid PVC casing.
- Polyfoam Combi Closer is a variant of System Closer, dimensioned to fit a range of cavity widths.

Typical Construction
Brick or block outer leaf (which may be rendered), cavity fully filled with Crown Supafil Cavity Wall Insulation, brick or block inner leaf. Internal finish of plasterboard on dabs.

Tests by the British Board of Agrément confirm that Crown Supafil Cavity Wall Insulation will not transmit water to the inner leaf. Nor will it transmit moisture by capillary action across the cavity or from below DPC level. This has been confirmed by independent research conducted for the DETR, which shows that cavity wall insulation does not add to the risk of water penetration.

Crown Supafil Cavity Wall Insulation offers virtually no resistance to water vapour, permitting the wall to breathe.

System Advantages
- Can be used to upgrade clear cavities in existing dwellings
- Installed by approved contractor
- Low Cost
- No fire stopping required in cavity
- Low system width
- Wall construction quicker than with built-in cavity wall insulation
- Injected after wall constructed, allowing empty cavity to be checked

Guarantees
Knauf Insulation offer a 25 year comprehensive guarantee for new build installations which also covers materials and workmanship. For installation in existing domestic properties, the Cavity Insulation Guarantee Agency (CIGA) offers a 25 year guarantee covering both materials and workmanship.
Performance

Crown Supafil Cavity Wall Insulation will not deteriorate with age or settle, and will therefore remain effective as an insulant for the life of the building.

The operations of all approved contractors are rigidly monitored by Knauf Insulation and the BBA in accordance with the terms of the BBA Certificate.

- Thermal performance

Crown Supafil Cavity Wall Insulation has a thermal conductivity of 0.040 W/m²K. The table gives U-values for typical constructions insulated with Crown Supafil Cavity Wall Insulation.

- Fire performance

Crown Supafil Cavity Wall Insulation is classified as Euroclass A1 to BS EN ISO 13501-1. The installation of Crown Supafil Cavity Wall Insulation will not adversely affect the fire rating of the wall and will not constitute a toxic hazard in fire conditions.

Installation

A survey is carried out prior to installation to ascertain the suitability of the building for insulation and to determine the position of flues, air vents, etc. Essential ventilation openings such as those providing combustion air or under floor ventilation, and all flues in the cavity wall are checked and sleeved, or otherwise modified to prevent blockage by the insulant.

An approved cavity barrier is inserted as appropriate to isolate terraced or semi-detached properties and to close any open cavities.

A series of 25mm diameter holes are drilled in accordance with the patterns detailed by the BBA Certificate. For new build schemes, the holes are usually drilled through the inner leaf and the insulant installed prior to plastering. For existing buildings, holes are usually drilled through the mortar joints in the outer leaf and are made good by repointing with mortar to match the wall finish as closely as possible.

Crown Supafil Cavity Wall Insulation is fed into an approved blowing machine and injected into the cavity under air pressure through a flexible hose fitted with a tapered nozzle.

The machine is fitted with a pressure sensor which automatically cuts off to stop the flow of material when the area of wall being insulated is completely filled to the correct density.

Vents, flues, etc, are checked to ensure they are free from blockage.

Specialised buildings

Knauf Insulation together with their Approved Installers have considerable knowledge and practical experience of installing Crown Supafil Cavity Wall Insulation in various constructions such as: Cornish, BISF and other system-built houses.

Knauf Insulation will be pleased to advise on the suitability of any building for insulation.

Certification

Crown Supafil is third party certified by the British Board of Agrément. See pages 27 and 28 for standard specification clauses.

---

Typical U-values (W/m²K) for masonry cavity walls insulated with Crown Supafil Cavity Wall Insulation

<table>
<thead>
<tr>
<th>Crown Supafil thickness (mm)</th>
<th>Dense block (λ=1.13)</th>
<th>Medium block (λ=0.51)</th>
<th>Lightweight block (λ=0.34)</th>
<th>Standard aircrete (λ=0.16)</th>
<th>Lightweight aircrete (λ=0.11)</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>0.33</td>
<td>0.32</td>
<td>0.31</td>
<td>0.28</td>
<td>0.27</td>
</tr>
<tr>
<td>85</td>
<td>0.37</td>
<td>0.36</td>
<td>0.35</td>
<td>0.32</td>
<td>0.30</td>
</tr>
<tr>
<td>75</td>
<td>0.41</td>
<td>0.39</td>
<td>0.38</td>
<td>0.35</td>
<td>0.32</td>
</tr>
<tr>
<td>65</td>
<td>0.46</td>
<td>0.44</td>
<td>0.42</td>
<td>0.38</td>
<td>0.35</td>
</tr>
<tr>
<td>50</td>
<td>0.55</td>
<td>0.52</td>
<td>0.50</td>
<td>0.44</td>
<td>0.41</td>
</tr>
</tbody>
</table>

Notes: The U-values have been calculated assuming that all walls are lined with plasterboard on dabs. Block sizes assumed to be 440 x 215mm, mortar joints assumed to be 10mm wide, wall ties assumed to be stainless steel with a cross-sectional area of 12.50mm². The U-values have been calculated to BS EN ISO 6946: 1997.
Full fill: built-in Crown DriTherm Cavity Slab

1. Brickwork outer leaf
2. Crown DriTherm Cavity Slab
3. Suitable wall tie
4. Blockwork inner leaf
5. Plasterboard on dabs

Products
- Crown DriTherm Cavity Slab is a lightweight, semi-rigid or rigid slab of glass mineral wool with a water-repellent additive. It is dimensioned to fit between wall ties at standard spacings.
- Crown DriTherm Cavity Slab Plus and Crown DriTherm Cavity Slab 34 and 32 have superior thermal performance to Crown DriTherm Cavity Slab.
- Polyfoam System Closer comprises Polyfoam high performance, 100% ozone friendly, extruded polystyrene, rigid board insulation semi-enclosed in a rigid PVC casing.
- Polyfoam Combi Closer is a variant of System Closer, dimensioned to fit a range of cavity widths.

Typical Construction
Brick or block outer leaf (which may be rendered), brick or block inner leaf with cavity fully filled with Crown DriTherm Cavity Slab. Internal finish of plasterboard on dabs.

For buildings from 12m to 25m high, Agrément Certificate No 95/3212 imposes additional requirements. Also the certification relates only to buildings where Knauf Insulation has given written approval for the use of Crown DriTherm Cavity Slab in the specified building.

Guarantee
All Crown DriTherm Cavity Slab products are formally guaranteed for 50 years to resist the transmission of liquid water from the outer masonry leaf to the inner masonry leaf in new external cavity walls and to have a thermal conductivity of 0.032 to 0.037 W/mK at normal building temperatures. Masonry includes bricks, blocks and dressed and reconstituted stone. The guarantee is available by application from Knauf Insulation.
Performance

- **Thermal performance**
  Crown DriTherm Cavity Slab has a thermal conductivity between 0.035 and 0.037 W/mK depending on thickness.

  Crown DriTherm Cavity Slab Plus has a thermal conductivity of 0.036 W/mK.

  Crown DriTherm Cavity Slab 34 has a thermal conductivity of 0.034 W/mK.

  Crown DriTherm Cavity Slab 32 has a thermal conductivity of 0.032 W/mK.

- **Fire performance**
  The range of Crown DriTherm Cavity Slabs are classified as Euroclass A1 to BS EN ISO 13501-1.

- **Moisture resistance**
  The range of Crown DriTherm Cavity Slabs contain a water-repellent silicone additive to ensure that no liquid water is able to pass through the slab and reach the inner leaf of masonry.

  Tests by the British Board of Agrément confirm that the range of Crown DriTherm Cavity Slabs will not transmit water to the inner leaf. Nor will they transmit moisture by capillary action across the cavity or from below DPC level.

- **Vapour resistance**
  The range of Crown DriTherm Cavity Slabs offer virtually no vapour resistance, allowing water vapour to pass freely through the slab.

System Advantages

- Lowest system width for given U-value
- BBA for all exposure zones
- Lowest overall cost
- Built-in during construction
- Compression fit between slabs prevents moisture penetration at joints
- Low embodied energy product

Certification

The full range of Crown DriTherm Cavity Slabs are third party certified by the British Board of Agrément.

See pages 27 and 28 for standard specification clauses.

**Typical U-values** (W/m²K) for masonry cavity walls fully insulated with Crown DriTherm Cavity Slab

<table>
<thead>
<tr>
<th>Insulation thickness [mm]</th>
<th>Insulation</th>
<th>Dense block</th>
<th>Medium block</th>
<th>Lightweight aggregate</th>
<th>Standard aircrete</th>
<th>Lightweight aircrete</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>(λ=1.13)</td>
<td>(λ=0.51)</td>
<td>(λ=0.34)</td>
<td>(λ=0.16)</td>
<td>(λ=0.11)</td>
</tr>
<tr>
<td>Crown DriTherm Cavity Slab</td>
<td>100</td>
<td>0.30</td>
<td>0.29</td>
<td>0.29</td>
<td>0.27</td>
<td>0.25</td>
</tr>
<tr>
<td></td>
<td>85</td>
<td>0.35</td>
<td>0.34</td>
<td>0.33</td>
<td>0.30</td>
<td>0.28</td>
</tr>
<tr>
<td></td>
<td>75</td>
<td>0.38</td>
<td>0.37</td>
<td>0.36</td>
<td>0.33</td>
<td>0.31</td>
</tr>
<tr>
<td></td>
<td>65</td>
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<td>0.40</td>
<td>0.39</td>
<td>0.35</td>
<td>0.33</td>
</tr>
<tr>
<td>Crown DriTherm Cavity Slab Plus</td>
<td>100</td>
<td>0.30</td>
<td>0.29</td>
<td>0.28</td>
<td>0.26</td>
<td>0.25</td>
</tr>
<tr>
<td></td>
<td>85</td>
<td>0.34</td>
<td>0.33</td>
<td>0.32</td>
<td>0.29</td>
<td>0.28</td>
</tr>
<tr>
<td></td>
<td>75</td>
<td>0.37</td>
<td>0.36</td>
<td>0.35</td>
<td>0.32</td>
<td>0.30</td>
</tr>
<tr>
<td>Crown DriTherm Cavity Slab 34</td>
<td>100</td>
<td>0.28</td>
<td>0.28</td>
<td>0.27</td>
<td>0.25</td>
<td>0.24</td>
</tr>
<tr>
<td></td>
<td>85</td>
<td>0.32</td>
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<td>75</td>
<td>0.36</td>
<td>0.35</td>
<td>0.34</td>
<td>0.31</td>
<td>0.29</td>
</tr>
<tr>
<td></td>
<td>65</td>
<td>0.40</td>
<td>0.39</td>
<td>0.37</td>
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<td>0.32</td>
</tr>
<tr>
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<td>50</td>
<td>0.49</td>
<td>0.46</td>
<td>0.45</td>
<td>0.40</td>
<td>0.37</td>
</tr>
<tr>
<td>Crown DriTherm Cavity Slab 32</td>
<td>100</td>
<td>0.27</td>
<td>0.26</td>
<td>0.26</td>
<td>0.24</td>
<td>0.23</td>
</tr>
<tr>
<td></td>
<td>85</td>
<td>0.31</td>
<td>0.30</td>
<td>0.29</td>
<td>0.27</td>
<td>0.26</td>
</tr>
<tr>
<td></td>
<td>75</td>
<td>0.34</td>
<td>0.33</td>
<td>0.32</td>
<td>0.30</td>
<td>0.28</td>
</tr>
<tr>
<td></td>
<td>65</td>
<td>0.38</td>
<td>0.37</td>
<td>0.36</td>
<td>0.33</td>
<td>0.32</td>
</tr>
<tr>
<td></td>
<td>50</td>
<td>0.47</td>
<td>0.44</td>
<td>0.43</td>
<td>0.39</td>
<td>0.36</td>
</tr>
</tbody>
</table>

Notes: The U-values have been calculated assuming that all walls are lined with plasterboard on slabs. Block sizes assumed to be 440 x 215mm, mortar joints assumed to be 10mm wide, wall ties assumed to be stainless steel with a cross-sectional area of 12.5mm². The U-values have been calculated to BS EN ISO 6946: 1997.
1. Build up the first stage of one leaf of masonry to include the first row of ties above the commencement of the Crown DriTherm Cavity Slab. Clean mortar squeeze from the masonry and snots from any ties or cavity tray.

2. Position the Crown DriTherm Cavity Slab against the masonry, so that the wall tie drips are halfway across the top edge of the slabs. The Crown DriTherm Cavity Slab should be cut to course if necessary. Crown DriTherm Cavity Slab should be taken below DPC level (preferably by at least 150mm) to provide edge insulation, with no risk of capillary action. Crown DriTherm Cavity Slab does not wick. Always bring Crown DriTherm Cavity Slab to course with wall ties.

3. The following leaf is then built to the top level of the Crown DriTherm Cavity Slab. Do not let the second leaf overtake the Crown DriTherm Cavity Slab so as to create a trough (but see 5 regarding choice of leading leaf).

**Installation**

The thickness of Crown DriTherm Cavity Slab and the cavity width should be designed within the tolerances given in the table opposite. Where walls go out of tolerance, the appropriate thickness of Crown DriTherm Cavity Slab should be chosen from the table.

It is not usually possible to compress Crown DriTherm Cavity Slab during installation because its resilience will be enough to dislodge bricks before the mortar has set.

Crown DriTherm Cavity Slab should be kept clean and free from mortar droppings. All joints should be closely butted. Any cutting and fitting should be neatly done and not distort the layers of glass wool which comprise the material – see page 24. DPCs should be installed to ensure that penetrating water is directed only to the outer leaf.

The illustrations outline technique only, and do not imply that the outer leaf must be built first.

Construction practice will vary from site to site. Where design details differ from those illustrated please do not hesitate to contact Knauf Insulation for any clarification required.

**Wall Ties**

Crown DriTherm Cavity Slab is supplied in 1200 x 455mm slabs for use between wall ties at 450mm vertical centres. Standard butterfly, stainless steel wire ties and vertical twist ties are suitable, as are all ties with a positive drip which will penetrate the top edge of the Crown DriTherm Cavity Slab halfway across its width. The use of any other type of tie should be referred to Knauf Insulation. Advice should also be sought from the wall tie manufacturer as to the maximum cavity width for which the use of a specific tie is approved.

Generally rows of wall ties should be at 450mm vertical spacing and at horizontal spacings of not more than 900mm or as otherwise required by the structure. Where whole rows of ties are at different vertical spacing, Crown DriTherm Cavity Slab should be cut to course, allowing an extra 5mm for compression to form close butt joints.
4. Proceed similarly with successive stages of the wall. As with normal masonry cavity construction, no mortar should remain in the cavity. Particular care should be taken to keep slab joints closely butted and free from mortar. To facilitate keeping the top edges of slabs clean it is recommended that a cavity board be used.

5. Building may proceed leading with either the inner or the outer leaf. When leading with the inner leaf it is recommended to build a trough not more than one brick deep at horizontal joints in Crown DriTherm Cavity Slab. The mortar joint should be struck flush inside the cavity, and any mortar droppings must be cleaned off before the next Crown DriTherm Cavity Slab is fitted.

Where extra ties are required, e.g. at the side of openings, Crown DriTherm Cavity Slab should be cut and fitted carefully around them. When off-cuts of Crown DriTherm Cavity Slab are needed, the slabs can be cut with a long bladed knife or bricklayer’s trowel.

<table>
<thead>
<tr>
<th>Crown DriTherm Cavity Slab thickness [mm]</th>
<th>Nominal cavity width [mm]</th>
<th>Permitted deviation [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>150</td>
<td>150</td>
<td>-0 +20</td>
</tr>
<tr>
<td>125</td>
<td>125</td>
<td>-0 +15</td>
</tr>
<tr>
<td>100</td>
<td>100</td>
<td>-0 +15</td>
</tr>
<tr>
<td>85</td>
<td>85</td>
<td>-0 +15</td>
</tr>
<tr>
<td>75</td>
<td>75</td>
<td>-0 +15</td>
</tr>
<tr>
<td>65</td>
<td>65</td>
<td>-0 +10</td>
</tr>
<tr>
<td>50</td>
<td>50</td>
<td>-0 +10</td>
</tr>
</tbody>
</table>
Problems to avoid

Do not push slabs into the cavity. Mortar snots may be dislodged and bridge the cavity. This can happen all too easily where a change in the leading leaf occurs and care should be exercised at such positions to ensure correct application.

Do not position Crown DriTherm Cavity Slab on slabs which have not been cleaned of mortar droppings.

Further Recommendations

Above, below and beside openings, where cut strips of Crown DriTherm Cavity Slab may be needed, particular care should be taken to fit closely and ensure work is clean and free from debris. At the end of the day’s work, or during rain, any exposed Crown DriTherm Cavity Slab should be covered.

If Crown DriTherm Cavity Slab is terminated vertically at an open cavity, a vertical DPC must be fitted up the inside face of the outer leaf to ensure that any mortar droppings on exposed edges do not bridge the cavity.

Do not tear or impale Crown DriTherm Cavity Slab. If there are protrusions into the cavity, Crown DriTherm Cavity Slab should be carefully cut to fit, particularly where there are extra wall ties around openings.

When using small offcuts, the face of the slabs and not the edge, shall be positioned against the wall surface.
Typical Construction
Brick or block outer leaf (which may be rendered), brick or block inner leaf with cavity fully filled with Rocksilk DriTherm Cavity Slab. Internal finish of plasterboard on dabs.

For buildings from 12m to 25m high, Agrément Certificate No 05/4207 imposes additional requirements. Also the certification relates only to buildings where Knauf Insulation has given written approval for the use of Rocksilk DriTherm Cavity Slab in the specified building.

Guarantee
Rocksilk DriTherm Cavity Slab is formally guaranteed for 50 years to resist the transmission of liquid water from the outer masonry leaf to the inner masonry leaf in new external cavity walls and to have a thermal conductivity of 0.037 W/mK at normal building temperatures. Masonry includes bricks, blocks and dressed and reconstituted stone. The guarantee is available by application from Knauf Insulation.
3) Full fill Built-in: Rocksilk DriTherm Cavity Slab

Building, Residential

External Walls

Rocksilk DriTherm Cavity Slab should be kept clean and free from mortar droppings. All joints should be closely butted. Any cutting and fitting should be neatly done and not distort the layers of rock wool which comprise the material. DPCs should be installed to ensure that penetrating water is directed only to the outer leaf.

The installation sequence is identical to Crown DriTherm Cavity Slab, as shown on pages 22 to 24.

### Performance

- **Thermal performance**
  Rocksilk DriTherm Cavity Slab has a thermal conductivity of 0.037 W/m²K.

- **Fire performance**
  Rocksilk DriTherm Cavity Slab is classified as Euroclass A1 to BS EN ISO 13501-1.

- **Moisture resistance**
  Rocksilk DriTherm Cavity Slab contains a water-repellent silicone additive to ensure that no liquid water is able to pass through the slab and reach the inner leaf of masonry.

Tests by the British Board of Agrément confirm that Rocksilk DriTherm Cavity Slab will not transmit water to the inner leaf. Nor will it transmit moisture by capillary action across the cavity or from below DPC level.

### System Advantages

- BBA for all exposure zones for buildings up to 25m high
- Lowest overall cost
- Built-in during construction
- Compression fit between slabs prevents moisture penetration at joints
- Low embodied energy product

### Typical U-values (W/m²K) for masonry cavity walls fully insulated with Rocksilk DriTherm Cavity Slab

<table>
<thead>
<tr>
<th>Insulation thickness (mm)</th>
<th>Dense block (λ=1.13)</th>
<th>Medium block (λ=0.51)</th>
<th>Lightweight aggregate (λ=0.34)</th>
<th>Standard aircrete (λ=0.16)</th>
<th>Lightweight aircrete (λ=0.11)</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>0.30</td>
<td>0.29</td>
<td>0.29</td>
<td>0.27</td>
<td>0.25</td>
</tr>
<tr>
<td>85</td>
<td>0.35</td>
<td>0.34</td>
<td>0.33</td>
<td>0.30</td>
<td>0.28</td>
</tr>
<tr>
<td>75</td>
<td>0.38</td>
<td>0.37</td>
<td>0.36</td>
<td>0.33</td>
<td>0.31</td>
</tr>
<tr>
<td>65</td>
<td>0.43</td>
<td>0.41</td>
<td>0.40</td>
<td>0.36</td>
<td>0.34</td>
</tr>
</tbody>
</table>

Notes: The U-values have been calculated assuming that all walls are lined with plasterboard on dabs. Block sizes assumed to be 440 x 215mm, mortar joints assumed to be 10mm wide, wall ties assumed to be stainless steel with a cross-sectional area of 12.5mm². The U-values have been calculated to BS EN ISO 6946: 1997.

### System Advantages

- BBA for all exposure zones for buildings up to 25m high
- Lowest overall cost
- Built-in during construction
- Compression fit between slabs prevents moisture penetration at joints
- Low embodied energy product

### Installation

Rocksilk DriTherm Cavity Slab is third party certified by the British Board of Agrément.

See pages 27 and 28 for standard specification clauses.
Typical Specification Clauses

1) Partial fill: Crown DriTherm Cavity Slab
Crown DriTherm Cavity Slab/Plus*/34*/32*, ......mm thick to be located in the cavity of all external masonry cavity walls.
(*delete as required)
The residual cavity width to be 25mm/50mm. Insulation to be retained against the cavity face of the inner leaf of masonry by means of insulation retaining wall ties as manufactured by ...... . The wall ties to have one of their drip centres half-way across the residual cavity.
The first run of wall ties to be located at 600mm centres horizontally (at a level to be decided by the specifier). Ties thereafter to be at 450mm centres vertically and a maximum of 600mm horizontally.
All work under construction must be protected overnight and during adverse weather conditions in accordance with BS 5628: Part 3: 1985.
Alternatively, refer to NBS clause: F30/12,151

2) Partial fill: Polyfoam Cavityboard
Polyfoam Cavityboard, ......mm thick, to be located in the cavity of all external masonry cavity walls; residual cavity width to be ......mm. Insulation to be retained against the cavity face of the inner leaf of masonry by means of insulation retaining wall ties as manufactured by ...... . The wall ties to have one of their drip centres half-way across the residual cavity.
The residual cavity width to be 25mm/50mm. The first run of wall ties to be located at the bottom level of the insulation (to be decided by the specifier). Ties to be at 450mm centres vertically and a maximum of 900mm horizontally.
All work under construction must be protected overnight and during adverse weather conditions in accordance with BS 5628: Part 3: 1985.
Alternatively, refer to NBS clause: F30/12,151

3) Crown Supafil
Crown Supafil Cavity Wall Insulation glass mineral wool to be injected into the cavity by an Knauf Insulation/BBA Approved Installer.
New cavity walls to receive Crown Supafil Cavity Wall Insulation by injecting insulation into the cavity should be constructed so that insulation cannot penetrate ventilation ducts or pass through to cavities in adjoining buildings or compartments which are not to be insulated. Close fitting ducts or sleeves should be installed across the cavity to serve air bricks and other ventilation openings. Cavity barriers should be installed at junctions with other properties and compartments, and as required by the Building Regulations.
Existing cavity walls to be inspected by the Approved Installer and all necessary builder’s work carried out prior to Crown Supafil Cavity Wall Insulation being injected.
All work to be in strict accordance with the procedures laid out in the relevant BBA Certificate and the Knauf Insulation “Operators” and “Survey & Assessment” manuals.
Alternatively, refer to NBS clause: P11/40,220
Typical Specification Clauses

4) Full fill: Crown DriTherm Cavity Slab and Rocksilk

DriTherm Cavity Slab
All external walls to be insulated during construction by completely filling the cavities with Crown DriTherm Cavity Slab/Plus*/34*/32*/Rocksilk DriTherm Cavity Slab* ......mm thick. (*delete as required)

The first run of wall ties to be located at 600mm centres horizontally (at a level to be decided by the specifier). Subsequent runs of wall ties to be at not more than 900mm centres horizontally, or as otherwise required by the structure, and at 450mm vertically.

All work under construction must be protected overnight and during adverse weather conditions in accordance with BS 5628: Part 3: 1985.

Alternatively, refer to NBS clause: F30/18,180

5) Polyfoam System Closer

Install Polyfoam System Closers, 25mm thick x ….mm wide (to equal cavity width) at jambs and sills of all openings in masonry cavity walls. Secure with the proprietary ties at maximum 500mm centres. Ensure that closers fit tightly to each other and to the lintel. The closer at the jamb must completely lap the closer at the sill.

Alternatively, refer to NBS clause: F30/18,180

6) Polyfoam Combi Closer

Install Polyfoam Combi Closers, 25mm thick x ….mm wide (to be cut, where necessary, to equal cavity width) at jambs and sills of all openings in masonry cavity walls. Secure with the proprietary ties at maximum 500mm centres. Ensure that closers fit tightly to each other and to the lintel. The closer at the jamb must completely lap the closer at the sill.

Alternatively, refer to NBS clause: K10/175,185,205

7) Polyfoam Linerboard

Polyfoam Linerboard of insulation thickness …..mm with integral 9.5mm plasterboard to be fixed directly to inner masonry leaf by adhesive*/plaster dabs*/ mechanical fixing* (*delete as required) using the method and materials recommended in Knauf insulation literature.

When the adhesive has set, secure with two ….. (manufacturer/reference) mechanical fixings along the top edge of each board (for adhesive/plaster dabs).
Knauf Insulation has helped give Rothesay on the Isle of Bute something to really ‘crow’ about! A’Chranag, Fyne Homes’ dramatic new housing development, uses Crown Supafil Cavity Wall Insulation to make it one of Europe’s most energy efficient housing projects. Designed by architect Gökay Deveci, A’Chranag (Gaelic for ‘crow’s nest’) is based on a traditional Scottish tower and was selected by the town’s residents from three alternative design concepts. The spectacular white tower has won a clutch of awards for design innovation and energy efficiency.

A’Chranag was one of just three buildings in Scotland to receive a RIBA Award in 2005 and was consequently included in the shortlist for the prestigious RIBA Stirling Prize. It won the Scottish Design Award’s Best Affordable Housing Design, was runner-up in the RIAS’s (Royal Incorporation of Architects in Scotland) Best Building In Scotland award (but won the independent vote conducted by the BBC) and was one of the ten buildings to feature in the RIAS’s ‘10-out-of-10: Buildings That Made A Difference’ exhibition held in Edinburgh during the summer.

With the highest thermal insulation performance in the UK, A’Chranag is one of Europe’s most energy efficient social housing projects; its radical design has reduced heating requirements within each of the 14 flats to just 1.5 kW and CO₂ emissions by a staggering 70 per cent! In fact, a combination of high-performance insulation, triple-glazing, airtight construction and a heat recovery system has eliminated the need for a dedicated heating system within the flats. Although a combined electric storage and panel heater is provided in the living rooms for ‘backup use’, no heating is needed in the bedrooms – incredible for a building located in a ‘high exposure zone’!

“The thermal performance of a building’s external walls is fundamental in the quest for maximum energy efficiency. A’Chranag’s walls are 600mm thick and their construction – a plasterboard lined 140mm block inner leaf, 300mm wide cavity with full-fill insulation and a 100mm dense concrete block outer leaf finished with a 20mm thick acrylic render – results in an Elemental U-value of just 0.10 W/m²K!”

“Selecting an insulation material that would support our stated objective of significantly reducing energy use – but without compromising the building’s aesthetic design – seemed quite a challenge!” said Gokay Deveci. “Apart from having a 300mm wide cavity, the wall is also curved which makes it difficult to install slab or board insulation effectively. Crown Supafil Cavity Wall Insulation has proved an ideal solution and fully satisfies both requirements.”

Crown Supafil Cavity Wall Insulation is a loose glass mineral wool insulation material that is injected into the wall’s cavity through 25mm diameter holes drilled through either the inner or outer leaf. Once installed, the material neither deteriorates nor settles with age and, of course, being glass mineral wool, also provides both acoustic and fire insulation. Crown Supafil Cavity Wall Insulation is covered by BBA Agrément Certificate 88/2033.

Frequently associated with retro-installation (homeowners are being offered Government subsidies to have cavity wall insulation installed) Crown Supafil Cavity Wall Insulation also offers designers of new-build projects an alternative method of achieving very high levels of thermal insulation. Crown Supafil Cavity Wall Insulation is only available from specialist installation companies that are both fully trained and approved by Knauf Insulation and approved and monitored by the British Board of Agrément.
Build & Construction

Residential

Detached Homes  Semi-Detached Homes  Terraced Homes  Apartments

Pitched Roofs  External Walls  Internal Walls  Basement Walls  Floors

Legend

Each green “box” reference means that a dedicated brochure is available on this application.

N = New Build  C = Conversion

- New Build and Upgrade (N)
  Solutions for new build “room in roof”, warm roof and ceiling level cold roof insulation and upgrading existing cold roof insulation.

- Loft Conversion - Room in Roof (C)
  Solutions for converting existing attic space into living area.

- Masonry Cavity (N&C)
  Solutions for masonry cavity wall construction full and part fill.

- Timber Frame (N)
  Solutions for insulation in modern timber frame homes.

- Masonry Solid (N&C)
  Solutions for internal and external insulation applied to solid masonry walls.

- Partition Walls (N&C)
  Solutions for dividing internal rooms in single dwelling construction.

- Separating Walls (N&C)
  Solutions for high performance separating walls between separate, but attached dwellings.

- Masonry Solid (N&C)
  Solutions for external basement wall to prevent thermal transition to the earth.

- Ground Floor (N)
  Solutions for insulating both slab on and suspended ground floors in both concrete and timber construction.

- Upper Floors (N&C)
  Solutions for insulating exposed above ground floors in both timber and concrete construction.

- Separating and Internal Floors (N&C)
  Acoustic solutions for floors separating two dwellings and floors within a single dwelling.
This information booklet is complemented by comprehensive specification and application system recommendations in the Knauf Insulation Guide, available through visiting our website.

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