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WILHAMS INSULATION FAR EAST SDN BHD

IHeatPro®

Wilhams Cavity

Rockwool insulation for full cavity fill

Wilhams Cavity provides a completely reliable and cost-effective method of insulating new masonry cavity walls.

The lightweight insulation batts considerably reduce heat loss without permitting water transmission from the outer to the inner leaf.

The risk of condensation is also reduced and intermittent cooling systems will be more effective.

Advantages

- Suitable for all exposure zones
- Acts as a cavity barrier
- Water repellent
- Excellent thermal and fire insulation
- Superior fit against blockwork
- Resists temperature of over 1000° C
- Achieves highest Euroclass A1 non-combustibility classification as defined in EN13501-1

Description

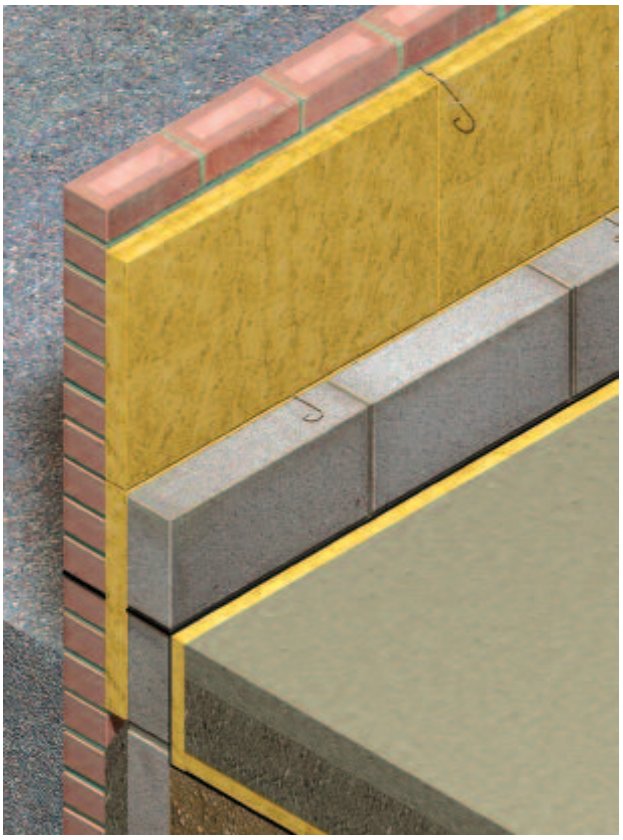
Wilhams Cavity is 1200mm long and 455mm wide. Standard thicknesses are 50, 65, 80, 90, 100 and 110mm.

The product width shown above is suitable for wall ties placed at 450mm vertical spacing.

Application

Wilhams Cavity can be/are used for thermal insulation of external masonry cavity walls and for the thermal insulation and acoustic protection of masonry party walls between dwellings.

In the UK, party cavity-walls between connected buildings used to be untreated and considerable heat can escape through them. If these cavities are left unfilled and unsealed, a U-value of 0.5W/m^{2}K will automatically be applied. Using Wilhams Cavity to fully fill the party will reduce the u-value to 0.00W/m^{2}K.



Brick/block wall with second course of batts in place, showing outer leaf raised first and location of wall ties

Party wall construction	U-value W/m^{2}K
Unfilled cavity with no effective edge sealing	0.50
Unfilled cavity with effective edge sealing only	0.20
Fully filled cavity and effective edge sealing	0.00

Construction and Installation Guidance

Designing the cavity wall

The use of Wilhams Cavity does not affect the choice of ties to BS1243 (or DD140), which should be selected according to structural requirements.

The outer leaf is the first line of defence against rain. Its effectiveness will be improved if attention is paid to the following points:

1. The width of the cavity should be designed after consideration of the dimensional tolerances of the components which make up the wall. An extra 5mm above the nominal batt thickness will normally be sufficient.
2. Select porous bricks, which in periods of brief, heavy showers will absorb the moisture. A non-absorbent brick will channel water into the mortar joints (see BS 5628 Part 3: 1985, para 21.3.2.2).
3. Select a lime mortar mix that does not contain detergent-type plasticisers, which reduce the water resistance of the joints.
4. Specify weather-struck, flush or bucket-handle joints. Recessed joints increase the risk of water penetration. Ensure all bed joints and perpend joints in the external wall are fully filled with mortar.
5. Cavity trays should incorporate stop ends and have weep holes at approximately 450mm centres (max 900mm centres).
6. Cavity trays should be continuous across closely spaced openings (Figure 1) and stop ends provided.
7. Vertical DPCs at wall openings should project at least 25mm into the cavity. (See Wilhams Cavity Closers Data Sheet for details)

Installing Wilhams Cavity

It is the contractor's responsibility to ensure that Wilhams Cavity is fitted in accordance with the recommendations of this data sheet.

1. The installation of the batts should commence below the DPC (preferably by at least 150mm) with no risk of capillary action to minimise warm bridging. The bottom row of ties should be at 450mm centres horizontally. If necessary, the width of the first course of batts can be cut to suit the height of the next row of wall ties. The width of cut batts should always be 5mm greater than the width to be insulated, eg. wall tie centres.
2. It is recommended that the external leaf be constructed ahead of the internal leaf so that any mortar protruding into the cavity space from the back of the external leaf can be cleaned off before installing the batts.
3. Build up a complete section of the leading leaf to one course above the next row of wall ties spaced at max. 900mm horizontally (Figure 2). Ensure that all mortar joints are properly filled, particularly the perpends.
4. Before installation of each course of batts, excess mortar must be removed from the inside face of the leading leaf and mortar droppings cleaned from the exposed edges of the batts. This is made easier by the use of a cavity board (Figure 3). This sequence should be maintained progressively up to wallplate (or cavity tray) level. It is important that the insulation is carried to the highest level possible in either case (Figure 6).

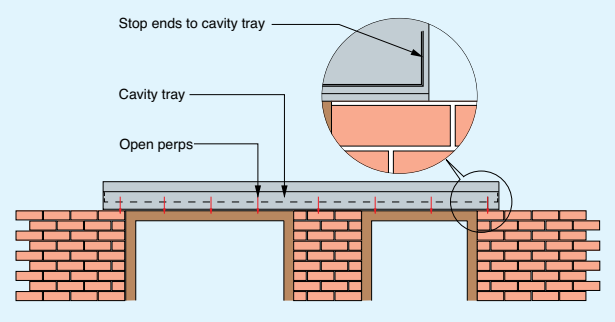


Figure 1 Cavity trays

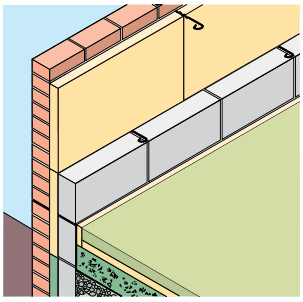


Figure 2

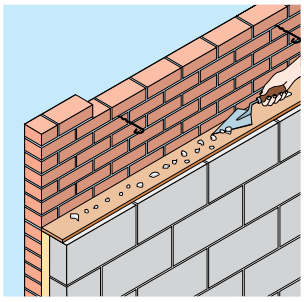


Figure 3

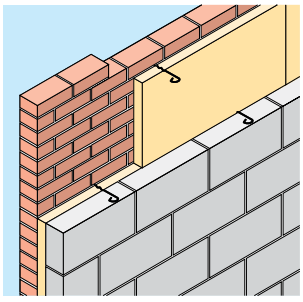


Figure 4

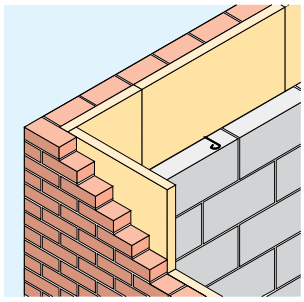


Figure 5

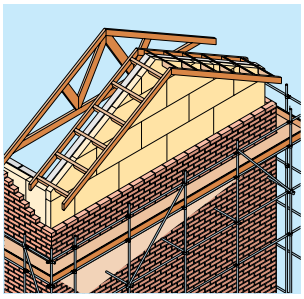


Figure 6

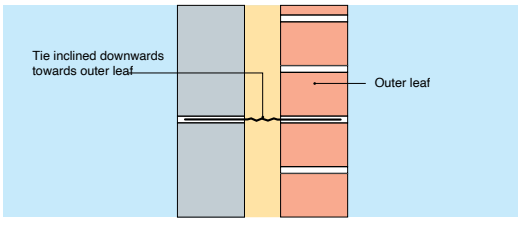


Figure 7

5. Fit Wilhams Cavity by compressing between the two rows of wall ties to form a clean and tight butt jointed course (Figure 4). Wall tie drips should be located centrally in the Batts (Figure 7). Ties must be inclined downwards towards the outer leaf.
6. It is essential that all joints between Wilhams Cavity batts are clean and tightly butted.
7. Raise the second leaf to the same level as the batts.

8. The as-built cavity width must not exceed the following dimensions:

Nominal batt thickness (mm)	Max. As-built clear cavity width (mm)
50	60
65	75
80	95
90	105
100	115
110	125

9. Repeat this sequence to the top of the wall (see Figure 6). If not, protect the top of the batts with a cavity tray.
10. To prevent water penetration to the inner leaf during driving rain, it is essential that no gaps are left between the batts.
11. Cut the batts cleanly, using a sharp, long bladed knife and a straight edge.
12. Fit the batts closely around wall openings. Slit the batts neatly where additional wall ties occur. Do not impale or tear them. At corner joints, edges must be cut accurately to ensure close butting (see Figure 5).
13. Cut the batts accurately to fit between wall ties, if not conventionally coursed. Ensure closely butted joints by cutting the batts 5mm larger in size than the wall-tie centres.
14. Avoid the build up of mortar on cavity trays.
15. Where make-up pieces have to be used, ensure that they are installed with the same direction of grain.
16. Protect the top of the cavity wall insulation at the end of the work period with a waterproof covering.
17. Store or cover Wilhams Cavity not in use and protect from site damage.

Standards and Approvals

Wilhams Cavity can be used towards compliance of the Malaysian Standard STREET, DRAINAGE AND BUILDING ACT 1974, UNIFORM BUILDING (AMENDMENT) TO BY-LAWS 2021, New by-law 38A “Energy efficiency in buildings” (1) where new or renovated non-residential building with air-conditioned space of exceeding 4,000 square metres — (a) shall be designed to meet the requirements of MS 1525 with regards to the Overall Thermal Transfer Value (OTTV).

Performance and Properties

Fire classification

Wilhams Cavity complies with all applicable life safety, building, and fire ratings of Jabatan Bomba Malaysia including surface spread of flame characteristics and has achieved a Euro Class A1 when tested to the BS EN 13501-1:2007+A1:2009 ‘Fire classification of construction products and building elements. Classification using test data from reaction to fire tests’.

Thermal performance

Wilhams Cavity has a thermal conductivity (K value) of 0.037W/mK.

Water resistance

The orientation of the water repellent fibres will prevent water crossing the wall construction. Provided the batts are correctly installed and sound building techniques are applied to the cavity wall construction, any water penetrating the outer leaf will drain down the surface of the batts.

Workability and fitability

Wilhams Cavity is extremely easy to install; cutting is simple (preferably with a long bladed knife and straight edge).

The construction of the batts, and flexibility along their length and width, allows tight ‘knitted’ joints to be obtained easily on site.

If a batt requires cutting, its width should always be 5mm greater than the width to be insulated, eg wall-tie centres, ensuring a tight/closely butted installation.

Durability

Wilhams Cavity has been proven in service for over 30 years in all types of climate and degrees of exposure. They will give effective insulation for the lifetime of the building.

Specification Clause

The full-fill cavity wall insulation is to be .....* mm thick Wilhams Cavity, supplied by Wilhams Insulation Far East Sdn Bhd, installed as work proceeds in accordance with their installation recommendations.

** Insert thickness to correspond with the cavity width, within the tolerance limits shown in Table 1 in BS6676 :Part 2: 1986.*

Health and Safety

Current HSE ‘CHIP’ Regulations and EU directive 97/69/EC confirm the safety of ROCKWOOL mineral wool; ROCKWOOL fibres are not classified as a possible human carcinogen.

The maximum exposure limit for mineral wool is 5 mg/m³, 8 hour time-weighted average.

A Material Safety Data Sheet is available from the Wilhams Marketing Services Department to assist in the preparation of risk assessments.

U values

Construction 1

102mm Facing brick outer skin, Wilhams Cavity full fill, Internal concrete block 100mm.
Internal finishes: (a) plaster (b) plasterboard on dabs

Block density (kg/m³) Block type Block λ	1900-2250 Dense 1.130 W/mK		1400-1450 Med/Light 0.510 W/mK		750 Aircrete 7N 0.190 W/mK		600 Aircrete 0.160 W/mK		470 Aircrete 0.110 W/mK	
Internal finishes	**a**	**b**	**a**	**b**	**a**	**b**	**a**	**b**	**a**	**b**
Insulation thickness	U value		U value		U value		U value		U value	
Uninsulated	1.55	1.31	1.33	1.15	0.92	0.83	0.84	0.77	0.68	0.63
50mm	0.57	0.51	0.54	0.49	0.46	0.42	0.44	0.40	0.39	0.36
75mm	0.42	0.38	0.40	0.37	0.35	0.33	0.34	0.32	0.31	0.29
100mm	0.33	0.31	0.32	0.30	0.29	0.27	0.28	0.26	0.26	0.25
125mm	0.27	0.26	0.26	0.25	0.24	0.23	0.24	0.23	0.22	0.21
150mm	0.23	0.22	0.23	0.22	0.21	0.20	0.21	0.20	0.19	0.19
175mm	0.20	0.19	0.20	0.19	0.19	0.18	0.18	0.18	0.17	0.17
200mm	0.18	0.17	0.18	0.17	0.17	0.16	0.16	0.16	0.16	0.15

Construction 2

Render, 100mm medium dense block outer skin, Wilhams Cavity full fill, Internal concrete block 100mm. Internal finishes: (a) plaster (b) plasterboard on dabs

Block density (kg/m³) Block type Block λ	1400-1450 Med/Light 0.510 W/mK		750 Aircrete 7N 0.190 W/mK		600 Aircrete 0.160 W/mK		470 Aircrete 0.110 W/mK	
Internal finishes	**a**	**b**	**a**	**b**	**a**	**b**	**a**	**b**
Insulation thickness	U value		U value		U value		U value	
Uninsulated	1.30	1.04	0.91	0.77	0.84	0.72	0.68	0.60
50mm	0.52	0.47	0.44	0.41	0.43	0.39	0.38	0.35
75mm	0.39	0.35	0.34	0.32	0.33	0.31	0.30	0.29
100mm	0.31	0.29	0.28	0.27	0.27	0.26	0.25	0.24
125mm	0.26	0.24	0.24	0.23	0.23	0.22	0.22	0.21
150mm	0.22	0.21	0.21	0.20	0.20	0.20	0.19	0.19
175mm	0.20	0.18	0.18	0.18	0.18	0.17	0.17	0.17
200mm	0.18	0.17	0.17	0.16	0.16	0.16	0.16	0.15

Construction 3

Render, 100mm Aircrete 7N block outer skin (0.190 W/mK), Wilhams Cavity full fill, 100mm Aercrete 7N block inner skin. (0.190 W/mK).
Internal finishes: (a) plaster (b) plasterboard on dabs

Block density (kg/m³) Block type Block λ	750 Aircrete 0.190 W/mK	
Internal finishes	**a**	**b**
Insulation thickness	U value	
Uninsulated	0.70	0.61
50mm	0.39	0.36
75mm	0.31	0.29
100mm	0.26	0.24
125mm	0.22	0.21
150mm	0.19	0.19
175mm	0.17	0.17
200mm	0.16	0.15

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