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**URSA** TERRA MINERAL WOOL  
URSA CAVITY BATTS

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Insulation for Masonry Cavity Walls



# The Company

URSA is a major UK and European manufacturer of glass mineral wool and extruded polystyrene with 10 production sites and a commercial presence in around 40 markets worldwide.

As a leading supplier of insulation and insulating systems, **URSA** has succeeded in fully addressing user requirements for thermal and acoustic insulation. Quality products for every application and excellent customer support are the cornerstones of the corporate culture.

Our mission at URSA is to be the preferred energy savings and acoustic comfort partner in the construction business for glass mineral wool and extruded polystyrene, driven by commercial excellence, the most efficient supply chain and the passion of our team.



# URSA CAVITY BATTS

**URSA CAVITY BATT** is a lightweight, semi rigid glass mineral wool slab treated with silicon based water repellent. It is suitable for use in both fully and partially filled masonry cavity walls up to 25m high.

**URSA CAVITY BATT 32** has a thermal conductivity of 0.032 W/mK and **URSA CAVITY BATT 35** has a thermal conductivity of 0.035 W/mK.



## Benefits

### Wider choice

**URSA CAVITY BATTS**, in a wide range of thicknesses, will assist in meeting the appropriate Building Regulation standard with any form of cavity wall construction.

### Quality

Outstanding product quality manufactured to ISO 9001 Quality Systems.

### User friendly

Our new generation URSA TERRA mineral wool has a 'soft touch' feel making it easier to handle and install whilst still maintaining its excellent mechanical properties.

### Environment

URSA mineral wool is manufactured from an abundant, sustainable resource and utilises up to 73% glass waste.

### Global warming potential

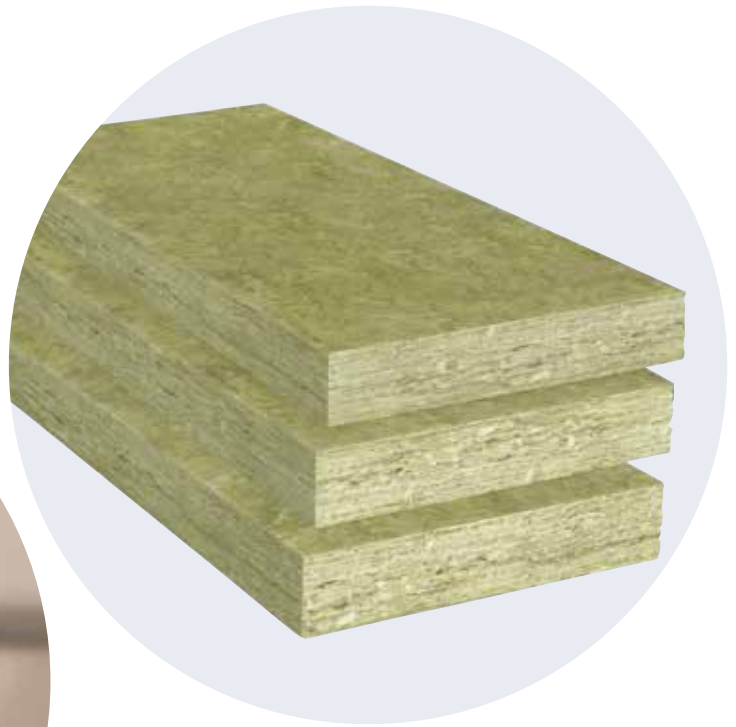
**URSA CAVITY BATTS** do not use chemical blowing agents and so the Global Warming Potential (GWP) arising from them is zero.

### Insulation savings

If a lightweight block is used for the inner leaf construction it is possible to meet the Building Regulation requirement with only 125mm **URSA CAVITY BATT**.

### Adaptable

One product may be used for both full and partial fill systems.



### Labour and cost saving

Larger slab size means 12% fewer slabs to install.

### Full fill system

Minimal overall wall width and most cost effective for a given U-value. **URSA CAVITY BATTS** may be used in any exposure zone in buildings up to 25m high.

### Partial fill system

The risk of wind driven rain penetration increases on exposed or coastal locations. The use of a residual 50mm clear cavity means **URSA CAVITY BATTS** may be used in any exposure zone.

### Acoustic

**URSA CAVITY BATTS** have excellent sound insulation characteristics and enhance the acoustic comfort of the building.

### Reduced risk of condensation

Walls fitted with **URSA CAVITY BATTS** create evenly warm conditions so reducing the risk of condensation.

### Effective below DPC

**URSA CAVITY BATTS** may be used below the damp-proof course in order to offer a degree of edge insulation to the floor.

### Handling

**URSA CAVITY BATTS** are lightweight yet tough, resilient and easy to install. They are easily cut using a sharp knife.

### Durability

**URSA CAVITY BATTS** are rot-proof, durable and maintenance free. They are non-hygroscopic and will not slump in normal use.

All of our products carry both the UKCA and CE Mark to show compliance with BS EN 13162 and are quality assured to ISO 9001.



# Design

## Full Fill Systems

The use of high efficiency insulation has benefits when achieving high standards of insulation without a great increase in the overall wall thickness. Fully filled cavity wall systems give minimal overall wall width and are the most cost effective solution for a given U-value. The system is satisfactory for use in buildings up to 12m high – between 12m and 25m extra precautions, including continuous cavity trays, are required;

- The maximum height of continuous cavity must not exceed 12m from ground level.
- Above 12m the maximum continuous cavity height should not be greater than 7m.
- The area to be insulated must not be an infill panel.
- The scheme must be assessed for its suitability for fully filling.
- Extra care is needed with both workmanship and site supervision.

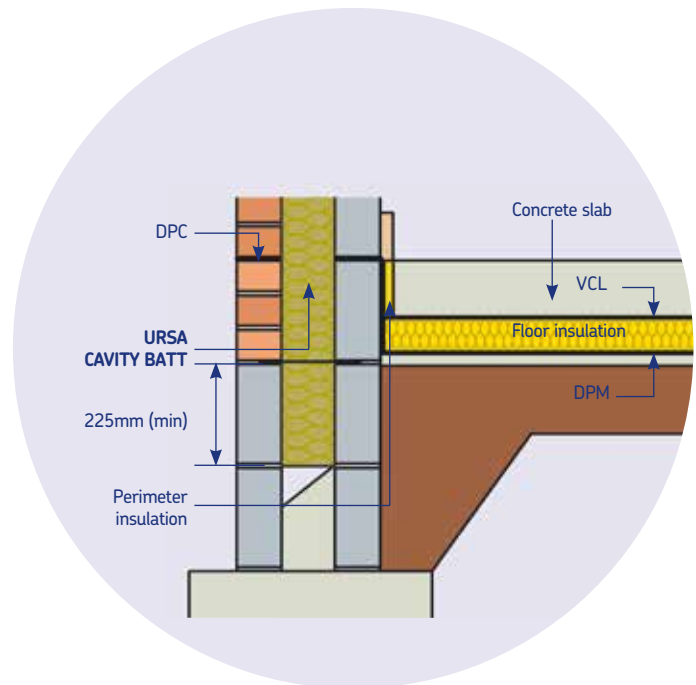
Follow the design data and information in BBA Certificate 09/4624.

## Partial Fill Systems

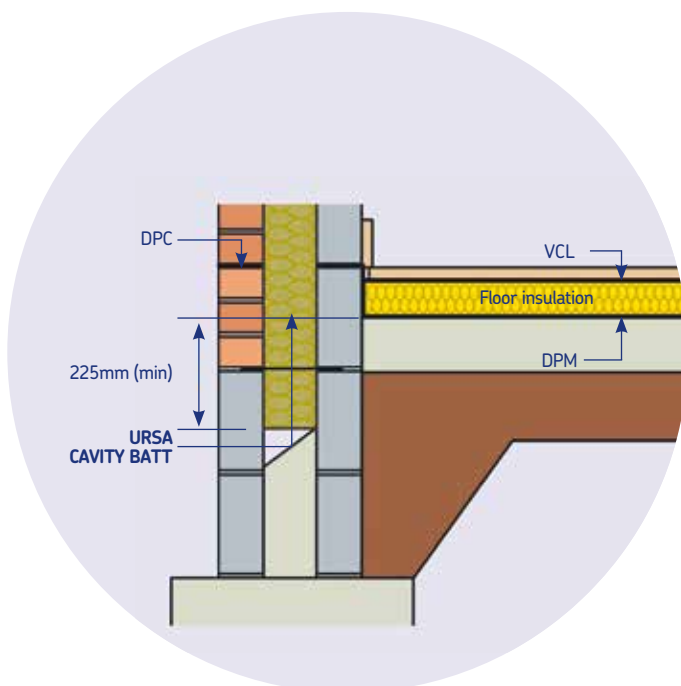
When using a partial fill system in buildings up to 12m high a minimum residual cavity width of 25mm may be acceptable depending on the exposure zone. It is important to ensure that the 25mm residual cavity is maintained, kept clean and clear of all debris and obstructions. Above 12m the residual cavity must be 50mm minimum.

To comply with NHBC Standards a 50mm residual cavity must be provided in all cases irrespective of the exposure zone. Follow the design data and information in BBA Certificate 09/4624.

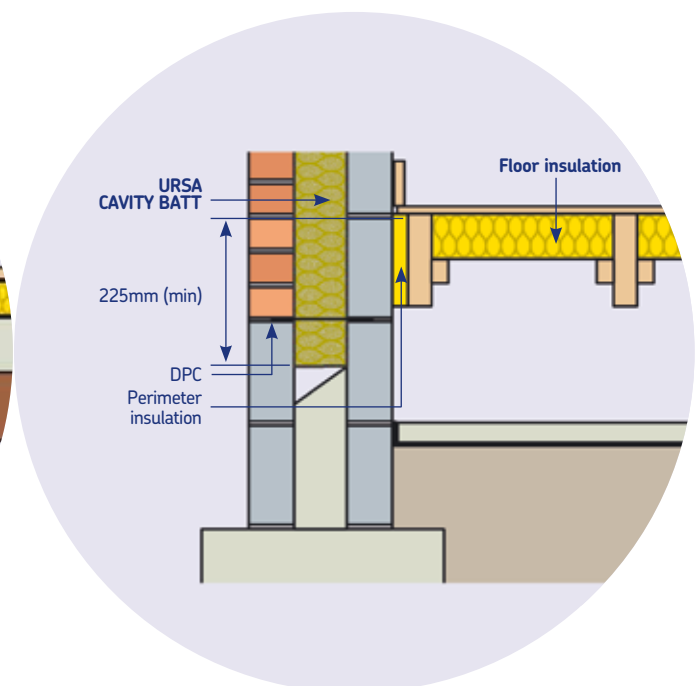
**Figure 1 – Wall/Floor Junction  
– Insulation Below Slab**



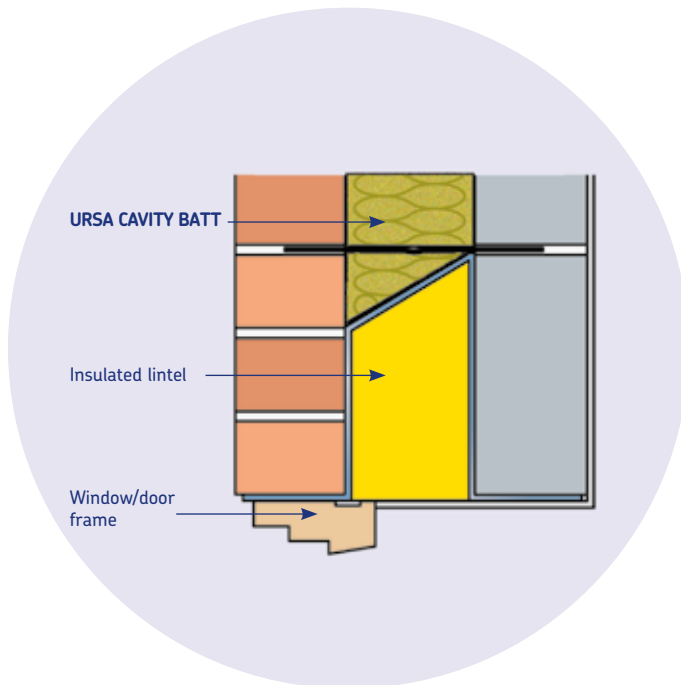
**Figure 2 – Wall/Floor Junction  
– Insulation Above Slab**



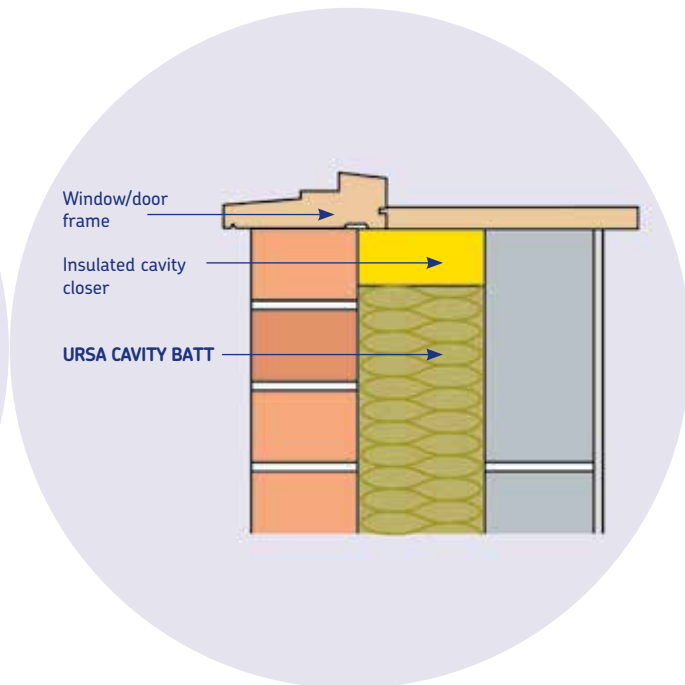
**Figure 3 – Wall/Floor Junction  
– Timber Floor**



**Figure 4 – Window Head Detail**



**Figure 5 – Sill Detail**



#### **Rainwater Penetration**

Above door, window and other openings the lintel should be protected by the use of a cavity tray with appropriate stop-ends and weep holes. Projections and discontinuities within the cavity such as changes in wall or insulation thickness or ring beams also require a cavity tray.

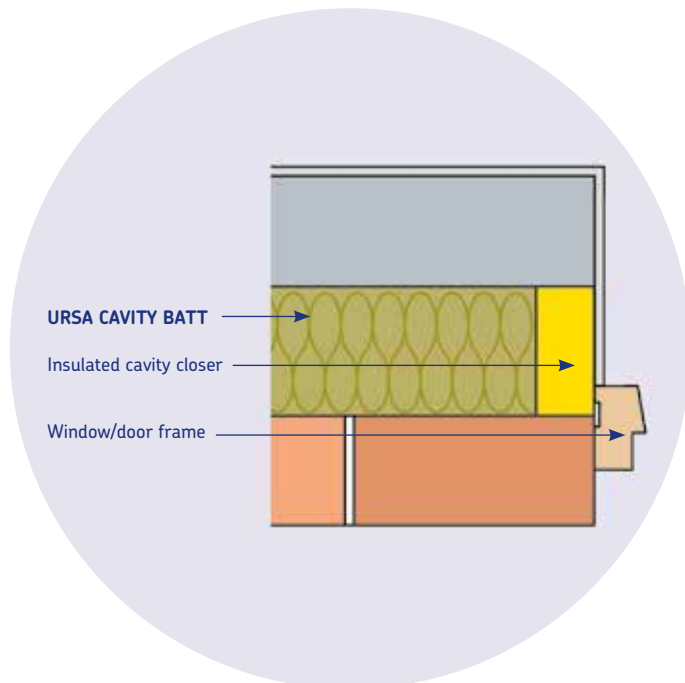
#### **Thermal Bridging**

With increasing levels of insulation it is vitally important to ensure continuity of the insulation at the junction of elements and around door and window openings.

At the junction of the floor and the wall a vertical section of insulation at the floor edge, the use of lightweight insulating blocks or extended cavity insulation can all help to reduce thermal bridging. (See Figures 1, 2 & 3).

Around door and window openings careful detailing of the cavity wall insulation along with the use of proprietary insulated cavity closers and insulated lintels can help to reduce thermal bridging. (See Figures 4, 5 & 6).

**Figure 6 – Jamb Detail**

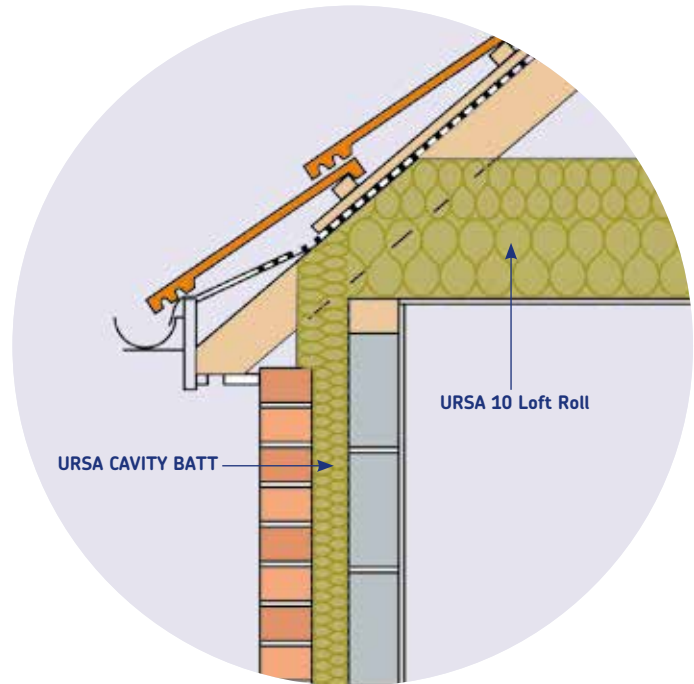




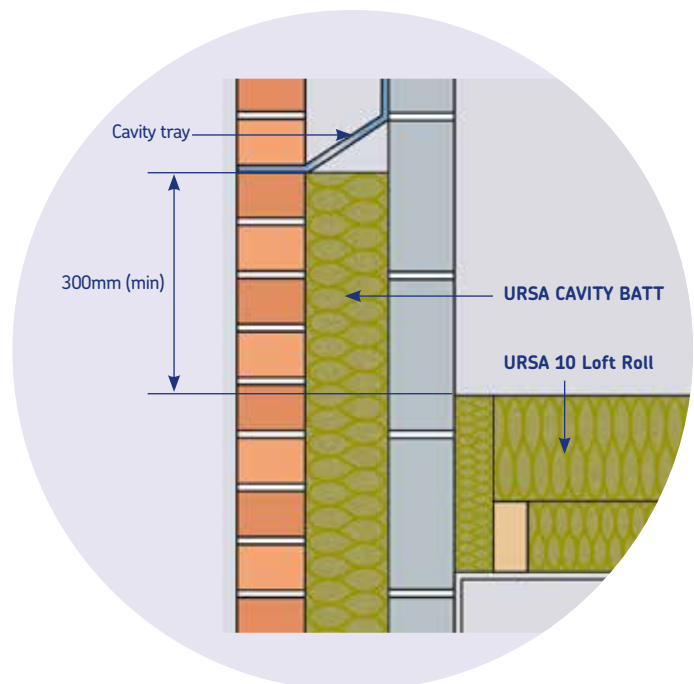
# Design

At the eaves ensure the cavity insulation extends to link with the roof insulation. In a cold pitched roof gable the cavity insulation should extend at least 300mm above the top of the loft insulation and should be protected by the use of a cavity tray. At gable walls with warm roof construction the insulation should be continued to the underside of the roof to ensure continuity of the wall and roof insulation. (See Figures 7, 8, 9 & 10).

**Figure 7 – Pitched Roof – Eaves Detail**



**Figure 8 – Cold Pitched Roof – Gable Detail**



### Workmanship

Studies by the BRE show that most failures of cavity insulation systems are due to poor workmanship and detailing. The following points should be carefully considered:

- Ensure the residual cavity is kept clean and free from mortar droppings and other debris.
- Clean the top edges of the **URSA CAVITY BATTS** and the wall ties before installing the next row of slabs. The use of a timber cavity board is recommended to help keep this area clean.
- Do not push slabs down into a partially built section of cavity wall as this may dislodge mortar and bridge the cavity.
- Small, cut sections of slab should be installed with the face against the masonry i.e. with the fibres running vertically.
- Carefully cut, rather than tear, the slabs to fit around wall ties and other penetrations that cross the cavity.

### Fire Performance

**URSA CAVITY BATTS** are non-combustible. When used within a masonry cavity wall constructed in accordance with the Building Regulations and BBA Certificate 09/4624 **URSA CAVITY BATTS** will not prejudice the fire resistance properties of the wall. Cavity barriers are not required but the cavity must be closed at the top of the wall and around any openings.

Figure 9 – Warm Pitched Roof – Eaves Detail

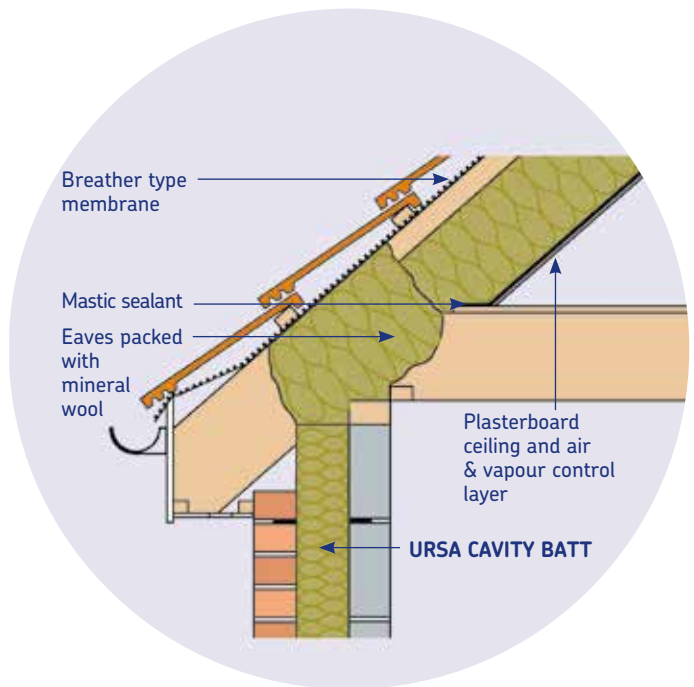
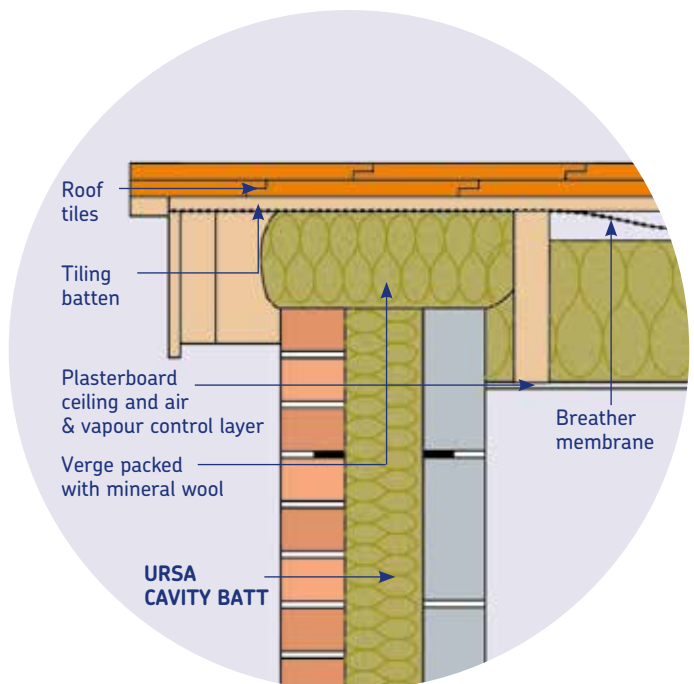


Figure 10 – Warm Pitched Roof – Gable/Verge Detail



# Installation

## Full Fill Systems (See Figure 11)

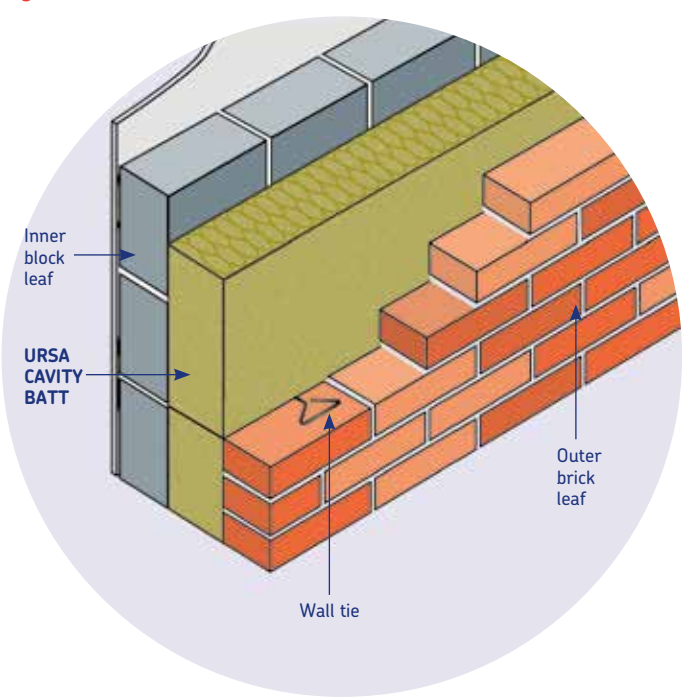
The wall may be constructed leading with either leaf. It is good practice however to construct the outer leaf first as this allows the mortar joints on the cavity face to be cleaned and to check that the mortar joints are all fully filled.

The **URSA CAVITY BATTS** are then installed as the wall is built.

### The usual procedure for construction is;

1. The leading leaf of masonry, ideally the outer leaf, is built with the first row of wall ties at 600mm centres where the insulation is to begin.
2. The first row of **URSA CAVITY BATTS**, cut to size if necessary, may begin below the DPC in order to offer edge insulation to the floor.
3. The inner leaf is then built, normally level with the top of the **URSA CAVITY BATTS**. It is permissible to build the outer leaf one brick higher to secure the next row of slabs – ensure mortar is cleaned from the cavity face.
4. Raise the leading leaf to the level of the next row of wall ties, normally at 450mm vertical centres (maximum 900mm centres horizontally). Ensure that the drip is positioned at the centre of the cavity and that the ties slope down towards the outer leaf. Excess mortar should be cleaned from this leaf before fitting the **URSA CAVITY BATTS** onto the lower ties.
5. **URSA CAVITY BATTS** may be installed in two or more layers if a very low U-value is required. Stagger the joints in each layer to ensure the best thermal performance.
6. The inner leaf is then built to the level of the top of the slabs and the process repeated.
7. The subsequent rows of slabs should be fitted with vertical joints staggered i.e. brick bond with all joints tightly butted. Slabs with damaged edges or corners should not be used.
8. As work proceeds ensure that the top edge of the **URSA CAVITY BATTS** is clean and free from mortar droppings. The use of a cavity batten will help to protect the slab edges as the next section is built.
9. Cut sections of slab will be required around openings or at corners. It is essential that these be cut accurately to fill the space they are intended for and are adequately secured. Do not bend the slabs around external or internal corners.
10. Ensure that partially completed walls are protected from inclement weather (wind, rain and snow) and at the end of the day's work.

Figure 11 – URSA CAVITY BATT – Full Fill



Permitted Deviation in Cavity Width (Full Fill)

URSA CAVITY BATT (mm)	Permitted Deviation (mm)
75	75 - 90
85	85 - 100
100	100 - 115
125	125 - 140
150	150 - 170



### Partial Fill Systems (See Figure 12)

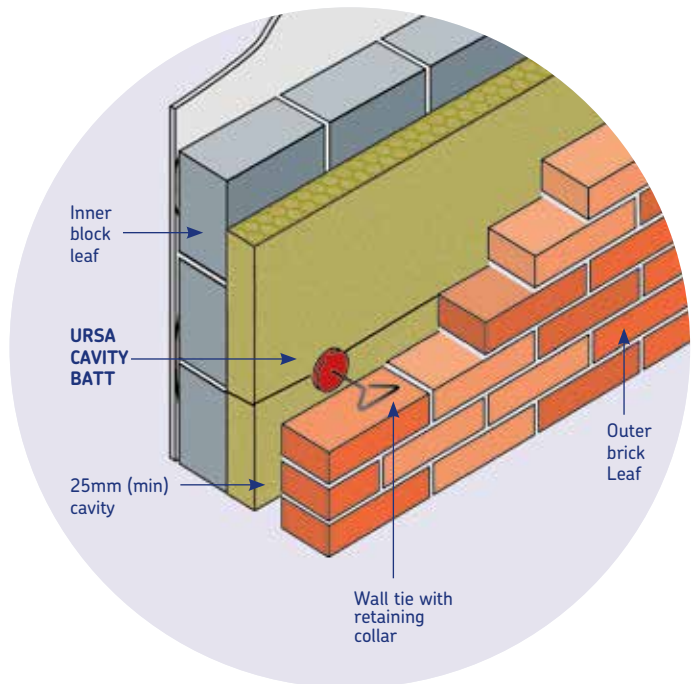
Generally the inner leaf is constructed ahead of the outer leaf with the **URSA CAVITY BATTS** fastened to the cavity face of the inner leaf using the wall ties or clips. Wall ties with collars are required to hold the slabs in position.

**URSA CAVITY BATTS** are 455mm wide to fit the 450mm vertical spacing of the wall ties. The horizontal spacing may vary but should be no more than 900mm to ensure adequate retention of the slabs. Spacing of the wall ties should follow the recommendations given in BS EN 1996, Eurocode 6. To prevent rainwater penetration across the wall a minimum 25mm clear cavity must be maintained at all times. A 50mm clear cavity is inherently safer and is a requirement of NHBC Standards.

#### The usual procedure for construction is;

1. The inner leaf is built with the first row of wall ties at 600mm centres where the insulation is to begin.
2. The first row of **URSA CAVITY BATTS**, cut to size if necessary, may begin below the DPC in order to offer edge insulation to the floor.
3. Raise the leading leaf to the level of the next row of wall ties, normally at 450mm vertical centres. Excess mortar should be cleaned from the inner leaf before fitting the slabs onto the lower ties and securing with a retaining collar.
4. **URSA CAVITY BATTS** may be installed in two or more layers if a very low U-value is required. Stagger the joints in each layer to ensure the best thermal performance.
5. The next row of wall ties (and collars) is fitted at maximum 900mm centres to retain the tops of the slabs. Ensure that the drip is positioned at the centre of the residual cavity and that the ties slope down towards the outer leaf.
6. Additional ties may be required for structural stability or to ensure adequate retention of the **URSA CAVITY BATTS**.
7. The outer leaf is then built to the level of the top of the slabs and the process repeated.
8. The subsequent rows of slabs should be fitted with vertical joints staggered i.e. brick bond with all joints tightly butted. Slabs with damaged edges or corners should not be used.
9. As work proceeds ensure that the top of the slabs and the residual cavity are kept clean and free from mortar droppings or other debris. The use of a cavity batten will help to protect the slab edges and keep the cavity clean as the next section is built.
10. Cut sections of slab will be required around openings or at corners. It is essential that these be cut accurately to fill the space they are intended for and are adequately secured. Do not bend the slabs around external or internal corners.
11. Ensure that partially completed walls are protected from inclement weather (wind, rain and snow) and at the end of the day's work.

Figure 12 – URSA CAVITY BATT - Partial Fill



# Heat Loss Calculations

The normal method of calculating U-values in floors, walls and roofs is the Combined Method (see BS EN ISO 6946) which as well as assessing the thermal bridge effect of mortar joints, timber studs etc also accounts for air gaps in the insulation and mechanical fasteners penetrating the insulation.

Compliance with the Building Regulations is shown by limiting the overall CO<sub>2</sub> emissions from the building – this gives considerable design flexibility but there are no specific U-values, except the worst allowable, that must be achieved.

In dwellings U-value of 0.18 W/m<sup>2</sup>K – 0.20 W/m<sup>2</sup>K or better will help ensure Building Regulation compliance. In non-dwellings aim for 0.22 W/m<sup>2</sup>K or better.

## URSA CAVITY BATT 32 Full Fill

### Typical Construction, Full Fill;

103mm brick

URSA CAVITY BATT 32 (0.032 W/mK)

100mm block (density and thermal properties as shown)

12.5mm plasterboard on dabs and skim

Wall ties with a thermal conductivity of 17.0 W/mK and cross sectional area of 12.5mm<sup>2</sup>

Block Density (kg/m <sup>3</sup> )	Block λ-value (W/mK)	U-Value (W/m <sup>2</sup> K)				
		100mm	125mm	150mm	175mm	200mm
450	0.11	0.23	0.19	0.17	0.15	0.13
600	0.15	0.24	0.20	0.17	0.15	0.14
800	0.19	0.24	0.21	0.18	0.16	0.14
1000	0.34	0.26	0.21	0.18	0.16	0.14
1200	0.44	0.26	0.22	0.18	0.16	0.14
1400	0.57	0.26	0.22	0.19	0.16	0.14
1600	0.99	0.27	0.22	0.19	0.16	0.15
1800	1.13	0.27	0.22	0.19	0.17	0.15
2000	1.33	0.27	0.22	0.19	0.17	0.15
2200	1.59	0.27	0.22	0.19	0.17	0.15
2400	1.93	0.27	0.22	0.19	0.17	0.15

### Multi-layer Systems

250mm URSA CAVITY BATT 32, U-value ≤ 0.12 W/m<sup>2</sup>K.

300mm URSA CAVITY BATT 32, U-value ≤ 0.10 W/m<sup>2</sup>K.

# Heat Loss Calculations

## URSA CAVITY BATT 32 Partial Fill

### Typical Construction, Partial Fill;

103mm brick

25mm (minimum) clear cavity

URSA CAVITY BATT 32 (0.032 W/mK)

100mm block (density and thermal properties as shown)

12.5mm plasterboard on dabs and skim

Wall ties with a thermal conductivity of 17.0 W/mK and cross sectional area of 12.5mm<sup>2</sup>

Block Density (kg/m <sup>3</sup> )	Block λ-value (W/mK)	U-Value (W/m <sup>2</sup> K)				
		100mm	125mm	150mm	175mm	200mm
450	0.11	0.22	0.19	0.16	0.15	0.13
600	0.15	0.23	0.19	0.17	0.15	0.13
800	0.19	0.23	0.20	0.17	0.15	0.14
1000	0.34	0.25	0.21	0.18	0.16	0.14
1200	0.44	0.25	0.21	0.18	0.16	0.14
1400	0.57	0.25	0.21	0.18	0.16	0.14
1600	0.99	0.26	0.21	0.18	0.16	0.14
1800	1.13	0.26	0.21	0.18	0.16	0.14
2000	1.33	0.26	0.21	0.18	0.16	0.14
2200	1.59	0.26	0.21	0.18	0.16	0.14
2400	1.93	0.26	0.22	0.18	0.16	0.14

### Multi-layer Systems

250mm URSA CAVITY BATT 32, U-value ≤ 0.12 W/m<sup>2</sup>K.

300mm URSA CAVITY BATT 32, U-value ≤ 0.10 W/m<sup>2</sup>K.

# Heat Loss Calculations

## URSA CAVITY BATT 35 Full Fill

### Typical Construction, Full Fill;

103mm brick

URSA CAVITY BATT 35 (0.035 W/mK)

100mm block (density and thermal properties as shown)

12.5mm plasterboard on dabs and skim

Wall ties with a thermal conductivity of 17.0 W/mK and cross sectional area of 12.5mm<sup>2</sup>

Block Density (kg/m <sup>3</sup> )	Block λ-value (W/mK)	U-Value (W/m <sup>2</sup> K)			
		75mm	100mm	125mm	150mm
450	0.11	0.30	0.24	0.21	0.18
600	0.15	0.31	0.25	0.22	0.19
800	0.19	0.32	0.26	0.22	0.19
1000	0.34	0.34	0.28	0.23	0.20
1200	0.44	0.35	0.28	0.23	0.20
1400	0.57	0.36	0.28	0.24	0.20
1600	0.99	0.36	0.29	0.24	0.20
1800	1.13	0.37	0.29	0.24	0.21
2000	1.33	0.37	0.29	0.24	0.21
2200	1.59	0.37	0.29	0.24	0.21
2400	1.93	0.37	0.29	0.24	0.21

### Multi-layer Systems

200mm URSA CAVITY BATT 35, U-value ≤ 0.16 W/m<sup>2</sup>K.

250mm URSA CAVITY BATT 35, U-value ≤ 0.13 W/m<sup>2</sup>K.

300mm URSA CAVITY BATT 35, U-value ≤ 0.11 W/m<sup>2</sup>K.

# Heat Loss Calculations

## URSA CAVITY BATT 35 Partial Fill

### Typical Construction, Partial Fill;

103mm brick

25mm (minimum) clear cavity

### URSA CAVITY BATT 35 (0.035 W/mK)

100mm block (density and thermal properties as shown)

12.5mm plasterboard on dabs and skim

Wall ties with a thermal conductivity of 17 W/mK and cross sectional area of 12.5mm<sup>2</sup>

Block Density (kg/m <sup>3</sup> )	Block $\lambda$ -value (W/mK)	U-Value (W/m <sup>2</sup> K)			
		75mm	100mm	125mm	150mm
450	0.11	0.28	0.23	0.20	0.18
600	0.15	0.29	0.24	0.21	0.18
800	0.19	0.30	0.25	0.21	0.18
1000	0.34	0.32	0.26	0.22	0.19
1200	0.44	0.33	0.27	0.22	0.19
1400	0.57	0.33	0.27	0.23	0.19
1600	0.99	0.34	0.27	0.23	0.20
1800	1.13	0.34	0.28	0.23	0.20
2000	1.33	0.34	0.28	0.23	0.20
2200	1.59	0.35	0.28	0.23	0.20
2400	1.93	0.35	0.28	0.23	0.20

### Multi-layer Systems

200mm URSA CAVITY BATT 35, U-value  $\leq 0.16$  W/m<sup>2</sup>K.

250mm URSA CAVITY BATT 35, U-value  $\leq 0.13$  W/m<sup>2</sup>K.

300mm URSA CAVITY BATT 35, U-value  $\leq 0.11$  W/m<sup>2</sup>K.



# Technical Details

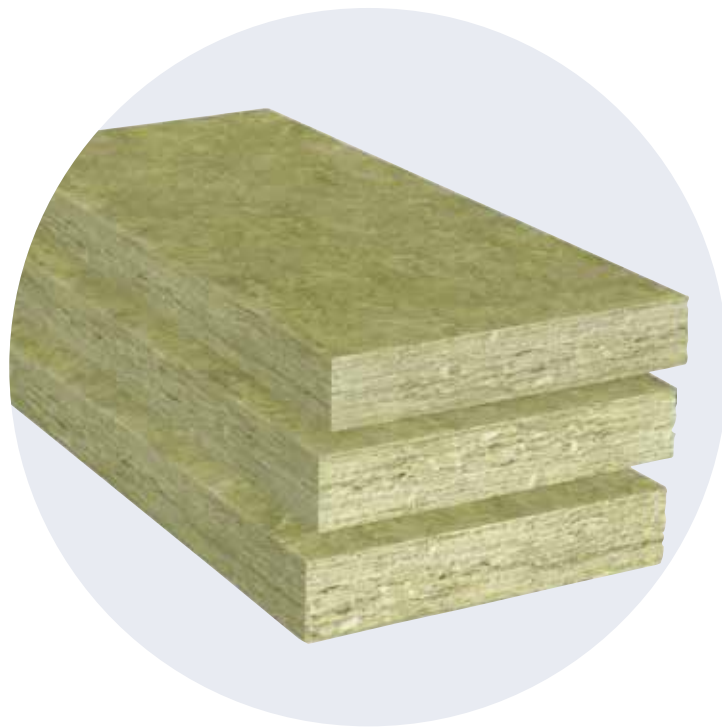
## Specification Clause

### Full Fill Systems

The full fill cavity wall insulation shall be ..... mm thick **URSA CAVITY BATT 32/35**, semi rigid mineral wool slab. Insulation to be installed as work proceeds in accordance with URSA UK Ltd instructions and the requirements of BBA Certificate No. 09/4624.

### Partial Fill Systems

The partial fill cavity wall insulation shall be ..... mm thick **URSA CAVITY BATT 32/35**, semi rigid mineral wool slab. Insulation to be installed as work proceeds in accordance with URSA UK Ltd instructions and the requirements of BBA Certificate No. 09/4624.



## Thermal Conductivity

Declared thermal conductivity of **URSA CAVITY BATT 32** is 0.032 W/mK.

Declared thermal conductivity of **URSA CAVITY BATT 35** is 0.035 W/mK.

Declared thermal conductivity tested to BS EN 13162.

## Density

Nominal density of **URSA CAVITY BATT 32** is 32 kg/m<sup>3</sup>.

Nominal density of **URSA CAVITY BATT 35** is 22 kg/m<sup>3</sup>.

## Reaction to Fire

Euroclass A1 to BS EN 13501-1.

## Moisture Vapour Transmission

**URSA CAVITY BATTS** have minimal resistance to the passage of water vapour thus allowing the wall to breathe. A practical value for the moisture vapour resistivity is 5 MNs/gm.

## Specific Heat Capacity

The specific heat capacity is 1.03 kJ/kgK.

### URSA CAVITY BATT 32

Dimensions		
Thickness (mm)	Length (mm)	Width (mm)
75, 85, 100, 125, 150, 175 & 200	1350	455

### URSA CAVITY BATT 35

Dimensions		
Thickness (mm)	Length (mm)	Width (mm)
75, 100, 125 & 150	1350	455

## Environmental Information

### BRE Green Guide

All URSA mineral wool products achieve the best possible 'A+' rating under the BRE Green Guide.

Manufactured to BS EN ISO 14001.

### **Durability**

When correctly installed, URSA mineral wool products are maintenance free and have an indefinite life at least equal to that of the building.

### **Storage**

URSA mineral wool products are supplied wrapped in polythene to provide short-term protection. On site the slabs should be stored clear of the ground, on a clean level surface and preferably under cover to protect them from prolonged exposure to moisture or mechanical damage.

### **Chemical Compatibility**

URSA mineral wool products are compatible with all common construction materials, alkalis, dilute acids, mineral oil and petrol. Products that have been in contact with harsh solvents, acids or saturated with water should not be used.

### **Health and Safety**

URSA mineral wool products are inherently safe to handle. During cutting or handling any dust generated is of nuisance value only; the wearing of dust masks, gloves and long sleeved clothing is recommended. Large scale machining should be connected to a dust extraction system. A comprehensive Health and Safety data sheet is available from URSA UK Ltd upon request.

### **Availability**

**URSA CAVITY BATTS** are available nationally through insulation distributors and builders' merchants.

### **References**

Agrément Certificate No. 09/4624.

The Building Regulations and supporting documents.

NHBC Standards (NHBC).

CIBSE Guide A3 – Thermal Properties of Buildings and Components.

BS EN 845 Specification for Ancillary Components for Masonry. Ties, Tension Straps, Hangers & Brackets.

BS 5250 Management of Moisture in Buildings – Code of Practice.

BS EN 13914 Design, Preparation and Application of External Rendering and Internal Plastering.

BS EN 1996, Eurocode 6; Design of Masonry Structures.

BS 8000 Workmanship on Building Sites. Part 3 Code of Practice for Masonry.

BRE Digests, Information Papers and Good Building Guides.



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