

URSA TERRA MINERAL WOOL
URSA WALLTEC BLACK 32 & URSAPAN BLACK

Insulation for use in Rainscreen Cladding Systems



The Company

URSA is a major UK and European manufacturer of glass mineral wool and extruded polystyrene with 11 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

WALLTEC BLACK 32 & URSAPAN BLACK

URSA WALLTEC BLACK 32 & URSAPAN BLACK are lightweight, non-combustible, semi-rigid glass mineral wool slabs treated with silicon based water repellent. They are faced with a black glass fibre tissue on one side. They are for use behind rainscreen cladding systems both new build and refurbishment.

URSA WALLTEC BLACK 32 has a thermal conductivity of 0.032 W/mK.

URSAPAN BLACK has a thermal conductivity of 0.035 W/mK.



Benefit

Labour and cost saving

Larger slab size means 12.5% fewer boards to install and 12.5% fewer fixings required

Quality

Outstanding product quality manufactured to ISO 9001 Quality Systems.

Fire performance

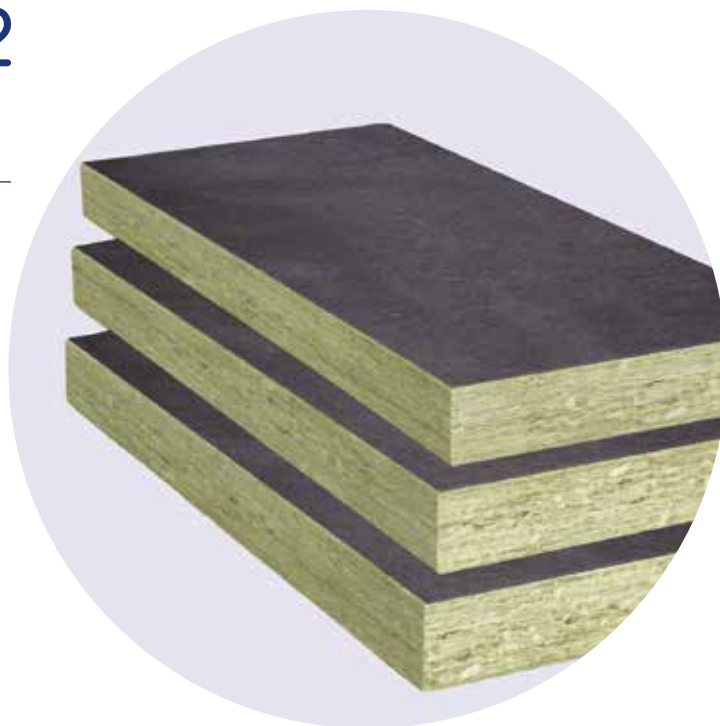
URSAPAN BLACK and **URSA WALLTEC** have a fire rating of Euroclass A1 making them totally non-combustible and fire safe behind cladding systems.

Environment

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

Black facing

The black glass fleece tissue facing means that **URSAPAN BLACK** and **URSA WALLTEC** can be used behind open joint cladding without being seen.



BBA certified

British Board of Agrément approved, No. 20/5832, for use behind normal rainscreen and masonry cladding, including use in high rise buildings.

Global warming potential

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

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.

Acoustic

URSAPAN BLACK and **URSA WALLTEC** have excellent sound insulation characteristics and help to enhance the acoustic comfort of the building.

Reduced risk of condensation

Insulating the wall structure externally creates evenly warm conditions so reducing the risk of condensation.

Handling

URSAPAN BLACK and **URSA WALLTEC** slabs are lightweight yet tough, resilient and easy to install. They are easily cut using a sharp knife.

Durability

URSAPAN BLACK and **URSA WALLTEC** slabs 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

Rainscreen cladding is a lightweight, non-load bearing system attached to the outside of a building using a bracket and rail system. The cladding system provides protection from wind and rain, improves the thermal performance and limits solar gains. A ventilated void, typically 50mm, behind the cladding keeping the system dry.

A wide range of external finishes are available from plain and coloured metals, embossed metal, terra cotta, fibre reinforced cement sheet, natural and artificial stone etc.

Systems are also available that use a traditional brick (or block) outer leaf in conjunction with a 50mm clear residual cavity. These utilise special wall tie systems that use restraint channels and matching ties (See Figure 1b).

URSA WALLTEC BLACK 32 and **URSAPAN BLACK** slabs are BBA certified. This offers independent confirmation of the physical properties and gives specifiers confidence that they are selecting products that comply with the Building Regulations and meet the rigorous criteria of the BBA.

Thermal

Rainscreen cladding systems may be used in both new build and refurbishment schemes in order to achieve the required U-value. See 'Heat Loss Calculations' later in this brochure.

The class leading performance **URSA WALLTEC BLACK 32**, thermal conductivity 0.032 W/mK, provides a continuous envelope of insulation around the building. Alternatively **URSAPAN BLACK**, thermal conductivity 0.035 W/mK, may be used.

Fire

URSAPAN BLACK and **URSA WALLTEC** are totally non-combustible, Euroclass A1, so do not add any fire load to the building or prejudice the overall fire performance of the wall.

The presence of the ventilated cavity behind the cladding system means that cavity barriers are required to prevent the spread of fire and/or smoke. It is recommended that horizontal cavity barriers are installed at every compartment floor level, at roof level and if required a vertical barrier to further sub-divide the cavity at compartment walls. See Approved Document B (England & Wales) and the Fire Section of the Technical Handbooks (Scotland).

Similarly all openings should be correctly fire stopped to prevent a fire from inside the building being able to break into the cavity.

It should be noted that the Approved Document B for England & Wales require insulation products in high rise (11m or more) cladding systems be of 'limited combustibility' or better. In Scotland the insulation should be totally 'non-combustible'.

The cavity barriers should be 'non-combustible', penetrate the full depth of the wall insulation, be securely fixed to the main structural wall and if in a ventilated rainscreen cladding system should incorporate an intumescent strip in order to fully close the cavity in the event of a fire.

Condensation Risk

A continuous layer of insulation external to the main structural wall ensures that the construction is inherently safe from condensation risk. Confirmation of the condensation risk can be provided by the URSA Technical Department.

Figure 1a – Typical Rainscreen Cladding System

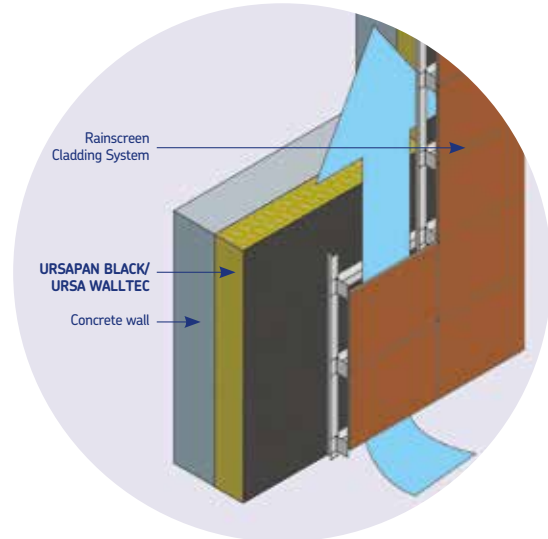
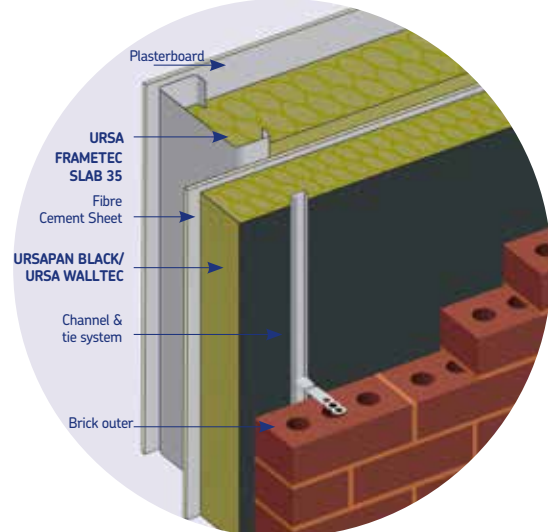


Figure 1b – Typical Brick Outer Leaf System



Rainwater Penetration

The cladding system provides the main weather protection. Some systems have open joints; rainwater penetrating these systems either drains down the back of the cladding panels or is removed by the ventilation in the void.

Acoustics

The **URSAPAN BLACK** and **URSA WALLTEC** slabs will add to the acoustic performance of the wall. They add acoustic absorption to the mass of concrete walls and add to the URSA mineral wool already between the studs in framed walls.

Thermal Bridging

As the insulation is applied in a continuous layer thermal bridging at the junction of internal and external walls, at the junction with intermediate floors and at the wall/roof junction can be largely mitigated.

These design recommendations show compliance with the relevant sections of the Building Regulations and NHBC Standards.

Installation

Rainscreen Cladding

URSA WALLTEC BLACK/URSAPAN BLACK/URSAPAN

may be fixed to masonry, timber frame and light metal frame walls. The slabs are mechanically fixed to the wall structure between the brackets used to support the cladding system.

The usual procedure for construction is;

1. Timber and metal stud framed walls should include a suitable air and vapour control layer on the inner surface behind the plasterboard. Timber frame walls should also include a breather membrane external to the sheathing.
2. The cladding system brackets are fixed to the main structural wall in accordance with the manufacturer's instructions.
3. Fix the **URSAPAN BLACK/URSA WALLTEC** slabs, black face outermost, to the wall in a staggered pattern. Installation may start below DPC level to help insulate the edge of the floor slab. The slabs may be fitted either landscape or portrait format. Ensure all joints are tightly butted together and that the slabs are cut accurately and tightly around the brackets ensuring that there are no gaps. Leaving the slabs slightly oversize ensures that the fibres will 'knit' together. The slabs cut easily with the use of a sharp knife.
4. The **URSAPAN BLACK/URSA WALLTEC** slabs are mechanically fixed to the wall using suitable insulation retaining fixings (with a minimum head diameter of 70mm) depending upon the substrate. A minimum fixing pattern is shown in Figure 2 – the central fixing in each slab must be metal rather than plastic. Alternatively, in areas of very high wind loading, use a plastic fixing at the corner of each slab with a metal fixing at the centre. Do not overdrive the fixings. Ensure the same fixing density is maintained for cut sections of slab and include at least one metal fixing.
5. **URSAPAN BLACK/URSA WALLTEC** may be installed in more than one layer if a particularly low U-value is required. Install the first layer of slabs using one mechanical fixing per board. Ensure the position of this fixing does not interfere with the final fixing pattern for slabs. Position the second layer, ideally with staggered joints, and install the final fixings as (4) above. Alternatively position both layers of slabs against the wall, ideally with joints staggered. Hold in position whilst drilling for the central metal fixing. Secure through both layers using the central metal fixing. Add further fixings as (4) above.
6. Ensure that cavity barriers are installed in accordance with the Building Regulations. In high rise this would include at every compartment floor level and at the top of the cavity. Ensure external openings are correctly sealed also.
7. **URSAPAN BLACK/URSA WALLTEC** is robust enough to be left exposed and will withstand short term, intermittent wetting. If prolonged bad weather (rain, snow, high winds, freezing conditions) is predicted fit only sufficient slabs that can be covered and protected by the cladding on the same day otherwise provide temporary weather protection. If the slabs get wet, they should be allowed to dry naturally – they will retain their original thermal performance. Damaged slabs should be replaced. See also 'Durability' on Page 10.

8. Once the insulation is fitted the external cladding work may proceed in accordance with the manufacturer's instructions.

Figure 2 – Fixing Pattern

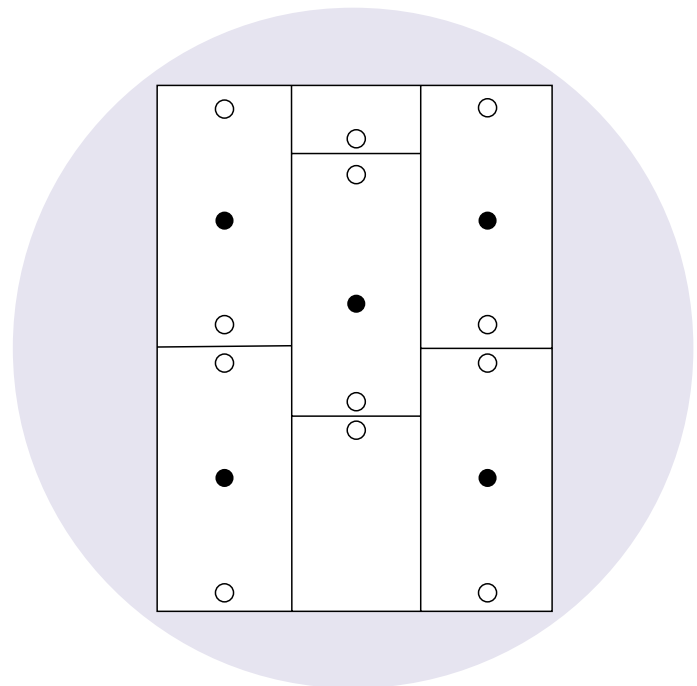
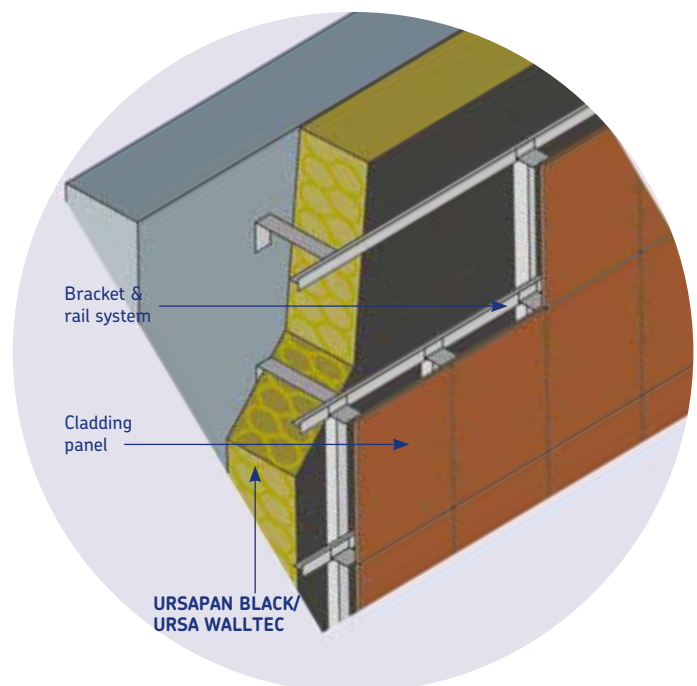


Figure 3 – Rainscreen Cladding on Concrete Wall



Installation

Brick Outer Leaf

URSA WALLTEC BLACK/URSAPAN BLACK/URSAPAN may be fixed to masonry, timber frame and light metal frame walls.

The usual procedure for construction is;

1. Fit the **URSAPAN BLACK/URSA WALLTEC** slabs horizontally in a staggered, brick bond pattern, with joints tightly butted. Ensure all joints are tightly butted together and that the slabs are cut accurately. Leaving the slabs slightly oversize ensures that there are no gaps. Installation may start below DPC level to help insulate the edge of the floor slab.
2. To assist in installation the slabs may be initially fixed to the wall using suitable insulation retaining fixings (with minimum head diameter of 70mm) depending upon the substrate. One fixing per slab (or part slab) is normally sufficient.
3. **URSAPAN BLACK/URSA WALLTEC** may be installed in more than one layer if a particularly low U-value is required. Install the first layer of slabs using one mechanical fixing per board. Alternatively position both layers of slab against the wall, ideally with joints staggered, and hold in position whilst drilling for a central fixing.
4. Ensure that cavity barriers are installed in accordance with the Building Regulations. In high rise this would include at every compartment floor level and at the top of the cavity. Ensure external openings are correctly sealed also.
5. Once the insulation is fitted install the channel restraint system, normally at 600mm horizontal centres, using suitable bolts or screws depending upon substrate. Ensure the fixings give a positive stand-off or incorporate a compression sleeve. Follow the manufacturer's instructions.
6. Alternatively, the channels and associated compression sleeves (to suit insulation thickness) and screw fixings may be installed before the insulation. The channels must be accurately set out at 600mm horizontal centres. Fit the insulation slabs vertically, slotting them between the channels and then add 2 mechanical fixings on the centre line and 200mm-250mm from each end of the slab.

7. The insulation slabs may be installed vertically between cranked wall ties with suitable retaining collars. If necessary slit the slab edges with a knife to enable them to fit neatly around the wall ties. There is no need for separate mechanical fixings.
8. The brick or block outer leaf is built in accordance with good practice.
9. **URSAPAN BLACK/URSA WALLTEC** is robust enough to be left exposed and will withstand short term, intermittent wetting. If prolonged bad weather (rain, snow, high winds, freezing conditions) is predicted fit only sufficient slabs that can be covered and protected by the cladding on the same day otherwise provide temporary weather protection. If the slabs get wet, they should be allowed to dry naturally – they will retain their original thermal performance. Damaged slabs should be replaced. See also 'Durability' on Page 10.

Figure 4 – Rainscreen Cladding on Timber Framed Wall

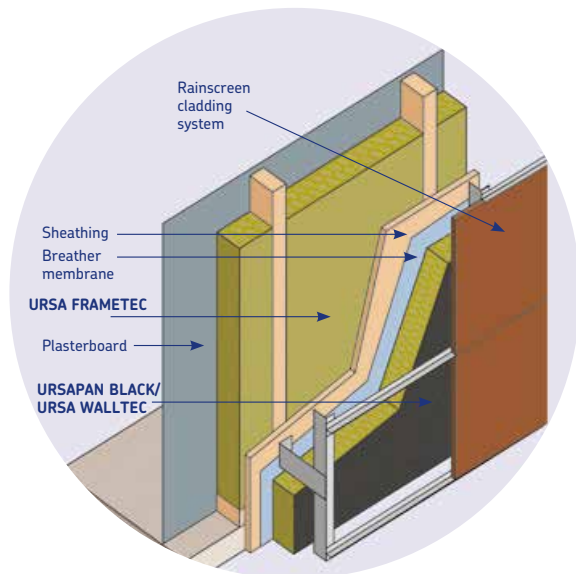


Figure 6 – Rainscreen Cladding with Brick Outer Leaf

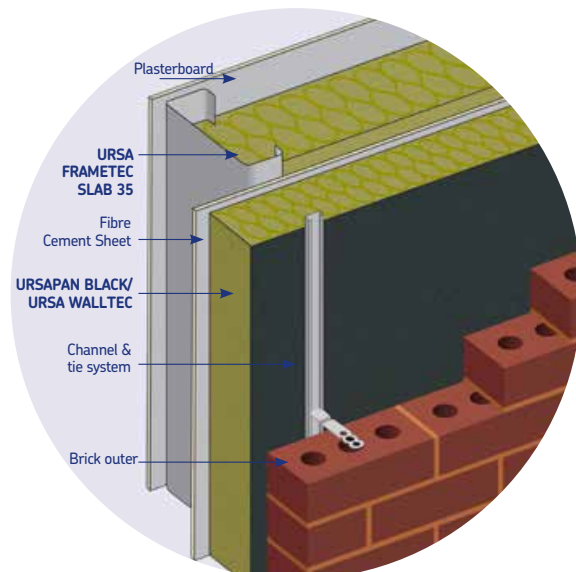
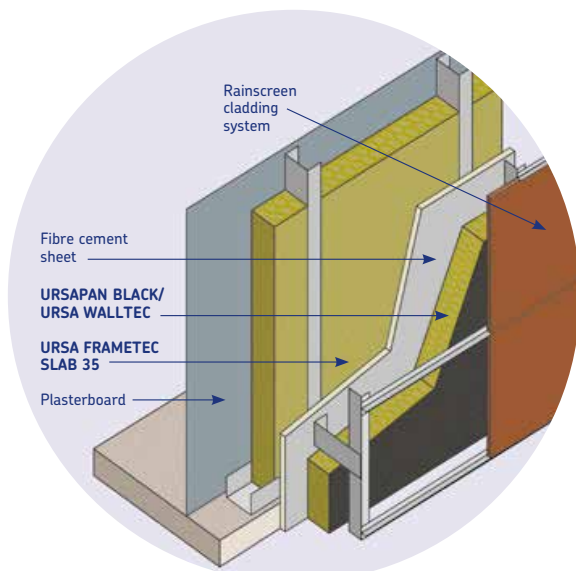


Figure 5 – Rainscreen Cladding on Light Steel Frame Wall



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.

The calculation for the U-value of rainscreen cladding systems is further complicated by the amount of thermal bridging due to the fixing brackets, and with some systems the fixing rails too. There are a number of approaches;

- Use the point thermal transmittance for the particular fixing bracket along with the number of brackets per square metre of wall.
- Use the 3D numerical analysis method contained in BS EN ISO 10211.
- In the absence of the above BR443 uses a default correction to the overall U-value of $+0.30 \text{ W/m}^2\text{K}$. This option is not recommended as the U-value can never be lower than the $0.30 \text{ W/m}^2\text{K}$.

When using a brick or block outer leaf the normal method of calculating U-values accounting for more discrete mechanical fasteners penetrating the insulation may be used.

In ventilated façade rainscreen systems the calculations assume standard aluminium brackets. Consider the use of stainless steel brackets if lower U-values are required particularly with masonry or concrete walls.

The Building Regulations no longer use the Elemental U-value Method as a means of showing compliance. Instead compliance is shown by limiting overall CO₂ 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 $0.18 \text{ W/m}^2\text{K}$ – $0.20 \text{ W/m}^2\text{K}$ or better will help ensure Building Regulation compliance. In non-dwellings aim for $0.22 \text{ W/m}^2\text{K}$ or better.

The following U-values are indicative only and can vary depending upon the cladding system and the brackets and rails used. Consult the cladding manufacturer for more specific information.

Heat Loss Calculations

Rainscreen Cladding

Typical Construction – Concrete Wall

Cladding panel/ventilated cavity

URSAPAN BLACK/URSA WALLTEC

150mm concrete

12.5mm plasterboard on dabs

Correction for brackets based on point thermal transmittance of 0.045 W/K and 2.1 brackets/m².

Consider the use of stainless steel brackets if lower U-values are required.

	U-Value (W/m ² K)	
Thickness (mm)	URSA WALLTEC BLACK 32	URSAPAN BLACK
100	0.37	0.39
120	0.33	0.35
140	0.30	0.32
160	0.28	0.29
180	0.26	0.27
200	0.24	0.25
220	0.23	0.24

Typical Construction – Timber Framed Wall

Cladding panel/ventilated cavity

URSAPAN BLACK/URSA WALLTEC

Breather membrane

9mm OSB/plywood sheathing

140mm URSA FRAMETEC 35 (15% bridged proportion)

Air & vapour control layer - 12.5mm plasterboard

Correction for brackets based on point thermal transmittance of 0.010 W/K and 2.1 brackets/m².

	U-Value (W/m ² K)	
Thickness (mm)	URSA WALLTEC BLACK 32	URSAPAN BLACK
100	0.17	0.18
120	0.16	0.16
140	0.15	0.15
160	0.14	0.14
180	0.13	0.14
200	0.12	0.13
220	0.12	0.12

Typical Construction – Light Steel Stud Framed Wall

Cladding panel/ventilated cavity

URSAPAN BLACK/URSA WALLTEC

10mm fibre reinforced cement sheet sheathing

150mm URSA FRAMETEC SLAB 35 (between studs)

Air & vapour control layer - 2 x 12.5mm plasterboard

Correction for brackets based on point thermal transmittance of 0.022 W/K and 2.1 brackets/m².

	U-Value (W/m ² K)	
Thickness (mm)	URSA WALLTEC BLACK 32	URSAPAN BLACK
100	0.20	0.21
120	0.19	0.20
140	0.18	0.18
160	0.17	0.17
180	0.16	0.16
200	0.15	0.16
220	0.14	0.15

Heat Loss Calculations

Brick Outer Leaf

Typical Construction – Concrete Wall

103mm brick/50mm cavity

URSAPAN BLACK/URSA WALLTEC

150mm concrete

12.5mm plasterboard on dabs

Correction for restraint channel fixings based on fixings with cross section area of 28 mm², thermal conductivity 17 W/mK and at 4.9 fixings/m².

	U-Value (W/m ² K)	
Thickness (mm)	URSA WALLTEC BLACK 32	URSAPAN BLACK
100	0.26	0.28
120	0.23	0.24
140	0.20	0.21
160	0.18	0.19
180	0.16	0.17
200	0.15	0.15
220	0.14	0.15

Typical Construction – Timber Framed Wall

103mm brick/50mm cavity

URSAPAN BLACK/URSA WALLTEC

Breather membrane

9mm OSB/plywood sheathing

140mm URSA FRAMETEC 35 (15% bridged proportion) Air & vapour control layer – 12.5mm plasterboard

Correction for restraint channel fixings based on fixings with cross section area of 28 mm², thermal conductivity 17 W/mK and at 4.9 fixings/m².

	U-Value (W/m ² K)	
Thickness (mm)	URSA WALLTEC BLACK 32	URSAPAN BLACK
100	0.14	0.15
120	0.13	0.14
140	0.12	0.13
160	0.11	0.12
180	0.11	0.11
200	0.10	0.10
220	0.09	0.10

Typical Construction – Light Steel Stud Framed Wall

103mm brick/50mm cavity

URSAPAN BLACK/URSA WALLTEC

10mm fibre reinforced cement sheet sheathing

150mm URSA URSA FRAMETEC SLAB 35 (between studs)

Air & vapour control layer – 2 x 12.5mm plasterboard

Correction for restraint channel fixings based on fixings with cross section area of 28 mm², thermal conductivity 17 W/mK and at 4.9 fixings/m².

	U-Value (W/m ² K)	
Thickness (mm)	URSA WALLTEC BLACK 32	URSAPAN BLACK
100	0.16	0.17
120	0.14	0.15
140	0.13	0.14
160	0.12	0.13
180	0.11	0.12
200	0.11	0.11
220	0.10	0.10

Technical Details

Specification Clause

The rainscreen cladding insulation shall bemm thick **URSA WALLTEC BLACK 32/URSAPAN BLACK** semi-rigid mineral wool slab. Insulation to be installed as work proceeds in accordance with URSA UK Ltd instructions, the requirements of BBA Certificate No. 20/5832 and with reference to the rainscreen cladding system manufacturer's requirements.

Thermal Conductivity

The declared thermal conductivity of **URSA WALLTEC BLACK 32** is 0.032 W/mK when tested to BS EN 13162. The declared thermal conductivity of **URSAPAN BLACK** and **URSA FRAMETEC/FRAMETEC SLAB 35** is 0.035 W/mK when tested to BS EN 13162.

Density

Nominal density of **URSA WALLTEC BLACK 32** is 32 kg/m³. Nominal density of **URSAPAN BLACK** and **URSA FRAMETEC/FRAMETEC SLAB 35** is 22 kg/m³.

Reaction to Fire

Euroclass A1 (non-combustible) to BS EN 13501-1.

Moisture Vapour Transmission

URSAPAN BLACK, URSA WALLTEC BLACK and **URSA FRAMETEC 35** have a 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

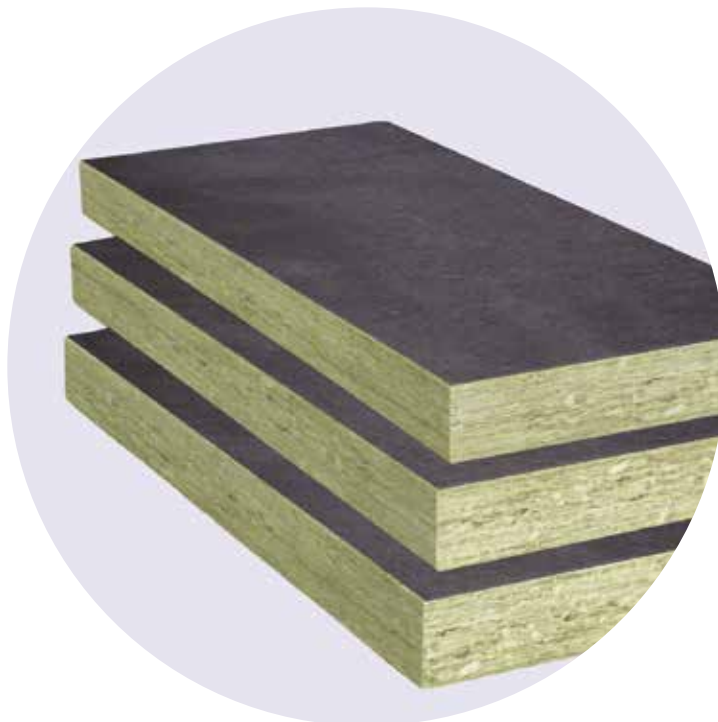
The specific heat capacity is 1.03 kJ/kgK.

URSA WALLTEC BLACK 32

Dimensions		
Thickness (mm)	Length (mm)	Width (mm)
60, 80, 100, 120, 130, 140, 150, 160, 180, 200, 220 & 240	1350	600

URSAPAN BLACK

Dimensions		
Thickness (mm)	Length (mm)	Width (mm)
90, 100, 120, 130, 140, 150, 160, 180, 200, 220 & 240	1350	600



Durability

URSA has undertaken both in-house and independent testing to assess the durability of WALLTEC BLACK and URSAPAN BLACK against wind driven rain and high winds. This involved leaving the slabs exposed on a test wall for several months and testing to BS EN 12865. This test assesses external wall systems resistance to driving rain under pulsating air pressure; it is intended for the complete wall system so is very onerous onto the insulation alone. Wind speeds up to 31 m/s (70mph) did not damage the slabs and rain at a pressure of 1200 Pa gave surface wetting only and did not result in water penetration through the slabs.

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 products 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 WALLTEC BLACK 32 & URSAPAN BLACK are available nationally through insulation distributors and builders' merchants.

References

Agrément Certificate No. 20/5832

The Building Regulations and supporting documents.

NHBC Standards (NHBC).

BR 135 – Fire Performance of External Thermal Insulation Systems for Walls of Multistorey Buildings (BRE).

GBG 31 – Insulated External Cladding Systems (BRE).

BCA Technical Note 18 – Use of Combustible Cladding Materials on Residential Buildings (Building Control Alliance).

BS 8414 Fire Performance of External Cladding Systems.

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

Fixings and Fasteners for Rainscreen Systems (MCRMA).

The Thermal Assessment of Window Assemblies, Curtain Walling and Non-traditional Building Envelopes (CAB/CWCT).

Technical Note 98 – Fire Performance of Façades; Guide to the Requirements of UK Building Regulations (CWCT).

CIBSE Guide A3 – Thermal Properties of Buildings and Components.

BRE Digests, Information Papers and Good Building Guides.



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