Insulation for use in Metal Cladding Systems

Metal Clad Walls and Roofs Design & Installation Guide

URSA. Insulation for a better tomorrow.

URSA have been specialists in innovative, award-winning insulation since 1959 - and a leading European manufacturer of glass mineral wool for over 50 years.

Our headquarters are in Madrid, Spain, although our business spans more than 40 countries, with 11 production sites and over 1,500 employees. Our team in the UK are dedicated to providing glass mineral wool insulation solutions, whatever the project.

Part of the Etex Group

In 2022 URSA became part of Etex - a global group comprising of 160 facilities across 45 countries and the name behind many other construction product brands in the building materials sector including Superglass, a leading UK glass mineral wool insulation manufacturer. In 2025, the Superglass and URSA brands came together to form Etex UK Insulation Ltd.

URSA TERRA

Developed in 2009, URSA TERRA showcases the latest in glass mineral wool technology. Our distinctive production methods and product formulation define the character of our extensive insulation product range.

URSA HOMETEC ROLL
is a non-combustible glass mineral wool insulation roll.
The roll is supplied 1200mm wide.

Design

Metal roofing and cladding systems are comprised of an inner liner tray with spacer brackets and sheeting rails, onto which is fixed the external cladding (Figure 1). The space created by the brackets and rails is used to accommodate glass mineral wool insulation. The nature of this type of construction means a number of specific design considerations must be taken into account – detailed design advice is available from the Metal Cladding and Roofing Manufacturers Association (MCRMA) and the Steel Construction Institute (SCI). Here's a summary of the critical features.

Spacer Brackets

The metal spacer brackets penetrate the thickness of the insulation and introduce a considerable amount of thermal bridging. To minimise this effect, the brackets should incorporate a thermal break.

Thermal Bridging

As the level of insulation increases, it is vitally important to ensure continuity of the insulation at the junction of elements. The full insulation thickness should be maintained throughout the whole wall or roof area with special care taken at corners, junctions and around openings. The insulation should be tightly butted together to allow the fibres to 'knit' and prevent any gaps.

Limiting Air Infiltration

Unwanted and uncontrolled air infiltration is a major source of heat loss. The Building Regulations place limits on the air infiltration rate, which must be measured on the completed building. Simple preventative measures include sealing the laps in the inner liner sheet, incorporating an air infiltration barrier (the vapour control layer may perform this function) and sealing gaps around penetrations and openings.

Condensation

Higher levels of insulation increase the risk of interstitial condensation - see BS 5250 for detailed design advice. Measures that should be taken include:

- Removal of the water vapour at source through suitable ventilation and/or extractor fans in high humidity areas
- Using a correctly detailed and carefully sealed air and vapour control layer (AVCL) (formed either by sealing the laps in the liner tray or providing a minimum 500g polythene sheet), to reduce the amount of water vapour from the habitable area passing into the cold void above the insulation. The AVCL should be continuous with special care being taken at the junctions of elements and around openings and penetrations.
- Providing ventilation above the insulation to remove any moisture-laden air. BS 5250 recommends that the voids of the external cladding should be ventilated at both ends, with ventilated fillers giving a minimum opening of not less than 5% of the sheet void above the rails. Ensure that birds, insects and vermin cannot enter via the vents.
- Sheet metal cladding and roofing may suffer intermittent condensation problems on clear, cloudless nights due to clear night sky radiation. This causes the metal cladding to fall to a temperature considerably below the ambient temperature, producing condensation on the underside of the external cladding. Consider using a breather membrane to allow any droplets of condensate to drain away to the gutters.

Design Loadings

The load exerted on the cladding will vary according to geographical location, site location and building height. Calculations relating to the bracket and rail fixing pattern should be made with reference to BS EN 1991, Eurocode 1; Actions on Structures.

Fire Performance

URSA HOMETEC ROLL is Deemed non-combustible with a fire classification of Euroclass A1 (the highest possible rating) when tested to EN 13501-1:2018 Reaction to Fire.

Acoustics

Lightweight roof and wall cladding systems can readily transmit sound. URSA HOMETEC ROLL has acoustic properties which can help reduce the overall sound transmission to acceptable levels.

A typical, un-insulated twin skin metal wall or roof will give approximately 30 dB sound reduction. This can be improved to more than 40 dB with the addition of 200mm URSA HOMETEC ROLL, and perhaps as high as 50 dB with a suitably designed cladding system.

This can either keep noise from inside the building (for example a factory environment) from annoying nearby residents or prevent noise pollution from outside the building (e.g. a nearby motorway or airport).

Similarly, glass mineral wool insulation may be used to control the acoustic performance inside the building. Large, open plan buildings may suffer excessive sound reverberation which can be controlled by suitable glass mineral wool linings.

A perforated inner liner tray allows sound energy to penetrate and be absorbed by the glass mineral wool within the roof or wall structure. This detail includes a relatively thin layer of tissue-faced glass mineral wool as the acoustic insulation, followed by the vapour control layer and main thickness of (thermal) insulation (Figure 2).

Figure 1
General Roof Detail

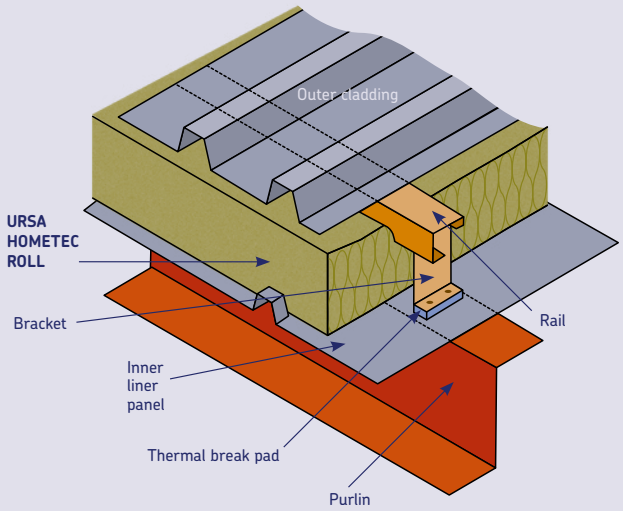
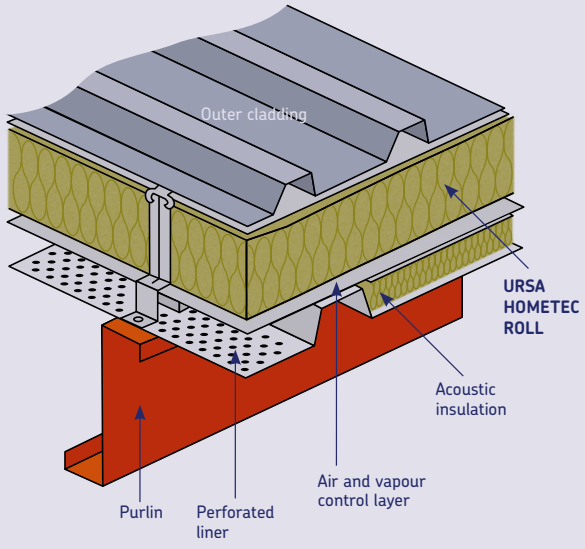


Figure 2
Acoustic Systems



Installation - Bracket & Rail Systems

URSA HOMETEC ROLL is designed to be laid on the inner lining sheet and held in place by the spacer brackets and sheeting rails.

The standard procedure is:

1. The structural framing, inner liner sheet, metal spacer brackets (with thermal break) and sheeting rails are installed in accordance with the manufacturer's instructions.
2. A polythene air and vapour control layer (AVCL), if required, is fixed on the liner with all joints lapped and sealed, with special care being taken at the junction of elements. Alternatively, the laps in the inner liner sheet may all be sealed to create the vapour control layer.
3. The URSA HOMETEC ROLL is laid on the inner liner sheet, ensuring there are no gaps in the insulation, around the brackets or around openings and penetrations. The insulation should be slid under the sheeting rails where it will be slightly compressed.
4. If required, a breather membrane is laid over the insulation prior to installing the external sheeting.
5. The profiled external sheeting should be installed as soon as possible after laying the URSA HOMETEC ROLL to avoid exposure to the weather. Lay only sufficient insulation that can be covered and protected on the same working day, otherwise provide temporary protection - which should also be used during bad weather including rain, wind and snow or freezing conditions.
6. Ensure that any penetrations through the wall/roof, especially if formed by following trades, are correctly sealed to form an air and vapour tight ceiling.

The insulation should not be walked on or excessively compressed, as this can damage the fibres, resulting in a loss of thickness and thermal performance. If damage occurs, replacement material must be installed.

Figure 3
Bracket & Rail Systems

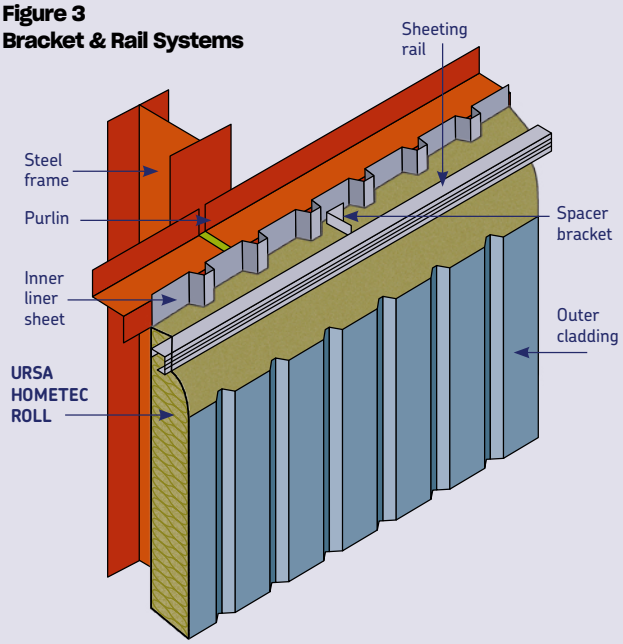
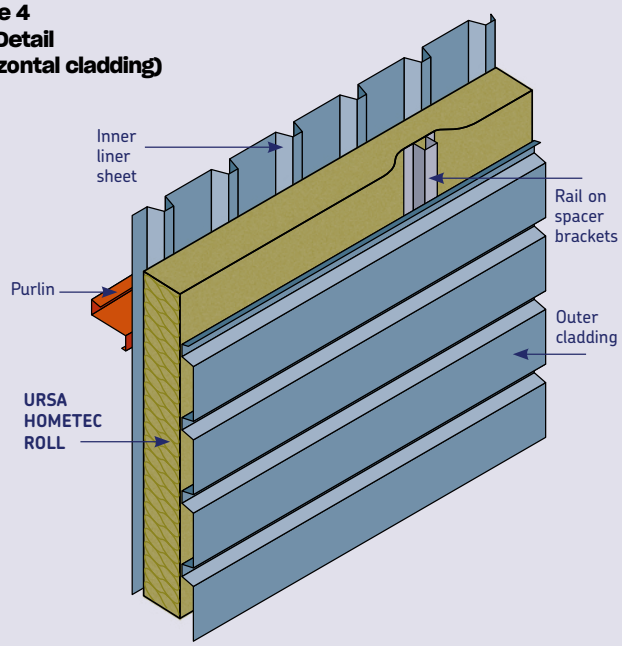


Figure 4
Wall Detail
(horizontal cladding)



Installation - Liner Tray Systems

URSA HOMETEC ROLL is designed to be laid in the liner tray and held in place by the external cladding.

The standard procedure is:

1. The structural framing and inner liner tray (with thermal break) are installed in accordance with the manufacturer's instructions.
2. The laps and joints in the liner tray should all be sealed to create the air and vapour control layer (AVCL).
3. The URSA HOMETEC ROLL is laid in the liner tray ensuring there are no gaps in the insulation or around openings and penetrations.
4. If required, a breather membrane is laid over the insulation prior to installing the external sheeting.
5. The profiled external sheeting should be installed as soon as possible after laying the URSA HOMETEC ROLL to avoid exposure to the weather. Fit only sufficient insulation that can be covered and protected on the same working day, otherwise provide temporary protection - which should also be used during bad weather including rain, wind and snow or freezing conditions.
6. Ensure that any penetrations through the wall/roof, especially if formed by following trades, are correctly sealed to form an air and vapour tight ceiling.

The insulation should not be walked on or excessively compressed, as this can damage the fibres, resulting in a loss of thickness and thermal performance. If damage occurs, replacement material must be installed.

Figure 5
Roof Detail

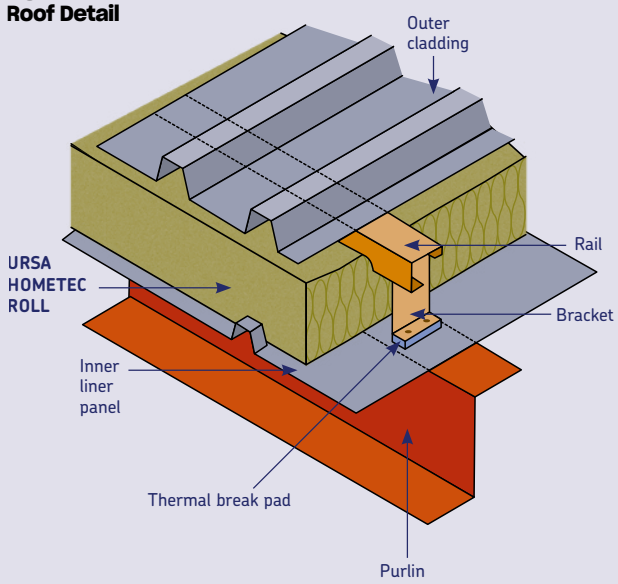
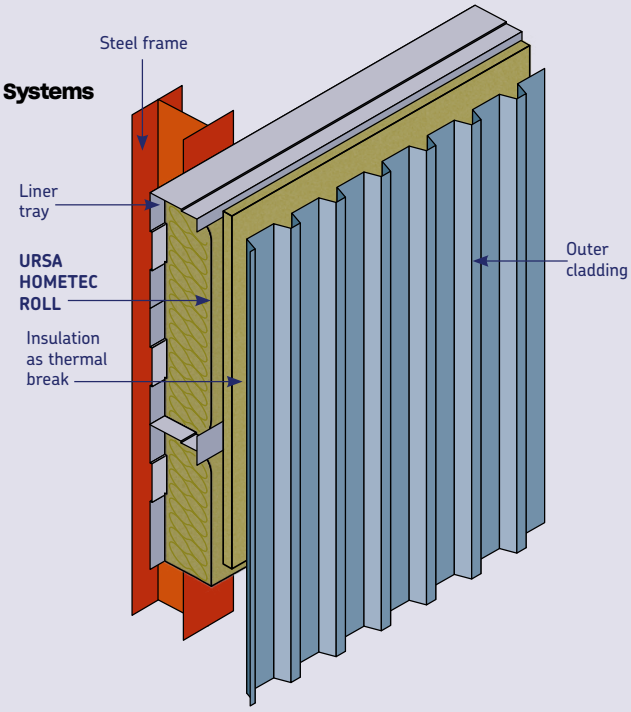


Figure 6
Liner Tray Systems



Installation - Liner Tray Systems

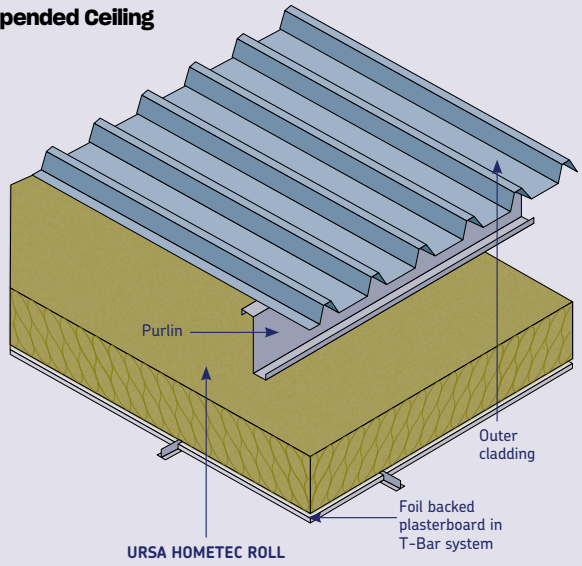
URSA HOMETEC ROLL is designed to be laid above the foil-backed plasterboard ceiling.

The standard procedure is:

1. The structural framing and cladding system are installed in accordance with the manufacturer's instructions.
2. The support system for the plasterboard ceiling, such as a T-bar system suspended from the structural frame (fixed in accordance with the manufacturer's instructions) or timber battens is then installed.
3. Fix foil-backed plasterboard to the support system and correctly seal any joints.
4. The URSA HOMETEC ROLL is laid on the plasterboard ceiling, making sure there are no gaps in the insulation, around the suspension wires or around openings and penetrations.
5. Ensure that any penetrations through the ceiling, especially if formed by following trades, are correctly sealed to form an air and vapour tight ceiling.

The insulation should not be walked on or excessively compressed, as this can damage the fibres, resulting in a loss of thickness and thermal performance. If damage occurs, replacement material must be installed.

Figure 7
Suspended Ceiling



Heat Loss Calculations

The normal method of calculating U-values in floors, walls and roofs is the Combined Method (see BS EN ISO 6946). However, this method cannot be used with metal cladding systems as the heat loss pattern is considerably more complex due to the metal spacer brackets and sheeting rails. Instead, refer to document P312, Metal Cladding: U-value Calculation, from the Steel Construction Institute (SCI) which gives a simplified method of either calculating the U-value from first principles or estimating it from graphs.

For systems that use Z-spacers refer to BRE Information Paper IP 10/02: Metal cladding: assessing the thermal performance of built-up systems using Z-spacers.

Compliance with the Building Regulations is shown by limiting the overall CO_2 emissions from the building - this gives considerable design flexibility, with no specific U-values, except the worst allowable, that must be achieved.

The following pages give typical U-values that can be achieved using URSA HOMETEC ROLL based on the following typical construction. 0.7mm profiled steel outer sheet.

URSA HOMETEC ROLL
0.4mm profiled steel inner sheet

0.67 spacer brackets per square metre.
60mm² cross-sectional area.
Conductivity 60 W/mK.

C Section rails @ 1500mm c/c.
40mm depth. 40mm width.
Conductivity 60 W/mK.

URSA HOMETEC ROLL 32

Insulation thickness (mm)	Wall U-Value (W/m²K)	Roof U-Value (W/m²K)
101	0.33	0.33
120	0.28	0.28
140	0.24	0.24
160	0.21	0.21
180	0.19	0.19
200	0.17	0.17
220	0.16	0.16
240	0.14	0.14
260	0.13	0.12
280	0.12	0.12

The above calculations were carried out for standard twin skin rail and bracket systems. These are to be used as a guide only, the system designer/manufacturer should be consulted for project specific u-value calculations.

Heat Loss Calculations

URSA HOMETEC ROLL 35

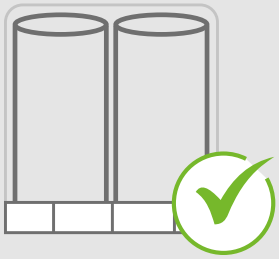
Insulation thickness (mm)	Wall U-Value (W/m²K)	Roof U-Value (W/m²K)
100	0.36	0.37
120	0.30	0.31
140	0.26	0.26
150	0.24	0.25
160	0.23	0.23
180	0.21	0.21
200	0.19	0.19
220	0.17	0.17
240	0.16	0.16
260	0.14	0.14
280	0.13	0.13

URSA HOMETEC ROLL 40

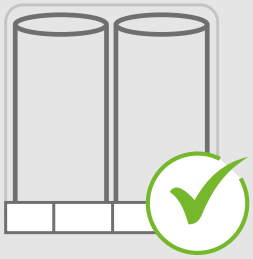
Insulation thickness (mm)	Wall U-Value (W/m²K)	Roof U-Value (W/m²K)
100	0.40	0.41
120	0.34	0.34
140	0.29	0.30
160	0.26	0.26
180	0.23	0.23
200	0.21	0.21
220	0.19	0.19
240	0.18	0.18
260	0.16	0.16
280	0.15	0.15
300	0.14	0.14

The above calculations were carried out for standard twin skin rail and bracket systems. These are to be used as a guide only, the system designer/manufacturer should be consulted for project specific u-value calculations.

How to store our insulation

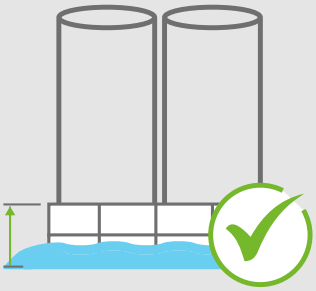


Keep the product covered and fully wrapped on a pallet until required.

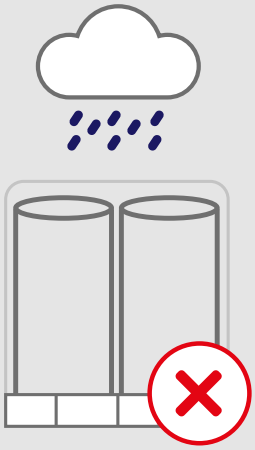


A pallet that is wrapped and has an undamaged hood can be stored outside when indoor space is unavailable, provided it is kept off the ground and protected from the elements. This should only be for short-term storage and not in severe weather conditions.

Once the plastic hood has been removed keep all of the product inside and off the ground away from the elements.



Product should be kept elevated on a pallet at all times to avoid sitting water.



Product can become wet and damaged when exposed to the elements.

Loose product is extremely likely to have water damage when left in the rain rendering your stock unfit for sale.

Please note: This guide is suitable for all URSA roll, slab and batt products. We do not recommend that URSA pallets are double stacked.

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