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**URSA** TERRA MINERAL WOOL  
URSA 10 DIVERSO Loft Roll

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Insulation for Cold Pitched Roofs



# 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 10 DIVERSO Loft Roll

**URSA 10 DIVERSO Loft Roll** is a lightweight, non-combustible, unfaced glass mineral wool product for use as loft insulation in cold pitched roofs.

It is perforated to allow it to be split into either 2 x 570mm or 3 x 380mm wide rolls.

**URSA 10 DIVERSO Loft Roll** has a thermal conductivity of 0.044 W/mK.



## Benefits

### Quality

Outstanding product quality manufactured to ISO 9001 Quality Systems.

### Global warming potential

**URSA 10 DIVERSO Loft Roll** does not use chemical blowing agents and so the Global Warming Potential (GWP) arising from it is zero.

### Insulation savings

It is possible to meet the Building Regulation requirement with only 350mm of **URSA 10 DIVERSO Loft Roll**.

### 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.

### Cost effective

Insulating pitched roofs at horizontal ceiling level is the most cost effective way of insulating new buildings or upgrading existing.

### Acoustic

**URSA 10 DIVERSO Loft Roll** has excellent sound insulation characteristics and enhances the acoustic comfort of the building.

### Environment

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

### Reduced waste

Perforated **URSA 10 DIVERSO Loft Roll** allows it to be used in full, half or third width options.

### Handling

**URSA 10 DIVERSO Loft Roll** is lightweight yet tough, resilient and easy to install. It is easily cut using a sharp knife.

### Space saving

Compaction of the rolls in their manufacture saves space in both storage and transport.

### Durability

**URSA 10 DIVERSO Loft Roll** is rot-proof, durable and maintenance free. It is 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

## Thermal Bridging

With increasing levels of insulation it is vitally important to ensure continuity of the insulation at the junction of elements. At the junction of the wall and the roof packing the eaves with glass wool, the use of lightweight insulating block cavity closer and extended cavity wall insulation can all help to reduce thermal bridging.

At gable walls the cavity insulation should be continued to at least 300mm above the top of the loft insulation to ensure continuity of the wall and roof insulation. The space between the last roof truss/joist and gable wall must be packed with insulation.

The loft access hatch should be insulated and draft sealed – proprietary units are available that achieve the required thermal and air infiltration performance.

## Limiting Air Infiltration

The plasterboard ceiling should be installed first with all joints between the ceiling and walls sealed with plaster, adhesive or flexible sealant. Seal all penetrations using a flexible sealant.

A correctly detailed and installed polythene air and vapour control layer (AVCL) will enhance the air tightness of the construction.

## Condensation

With increasing levels of insulation the increased risk of interstitial condensation must be carefully considered – BS 5250 gives detailed design advice.

In pitched roofs the governing factor is the choice of roof tile underlay, either High Resistance (HR) or Low Resistance (LR) types:

**Type HR Underlay (Figure 2)** – these are the more traditional bitumen or polythene based products that have a water vapour resistance greater than 0.25 MNs/g.

Ventilation of the roof void must be provided as follows:

- 25,000mm<sup>2</sup>/m, at low level, for pitches of 15° or less.
- 10,000mm<sup>2</sup>/m, at low level, for pitches of more than 15°.

Additional openings, at high level, equivalent to a continuous gap of 5,000mm<sup>2</sup>/m should be used if:

- The roof pitch exceeds 35°.
- The roof span exceeds 10m.
- Lean-to and mono pitch roofs.

Figure 1 – Cold Pitched Roof – Gable Detail

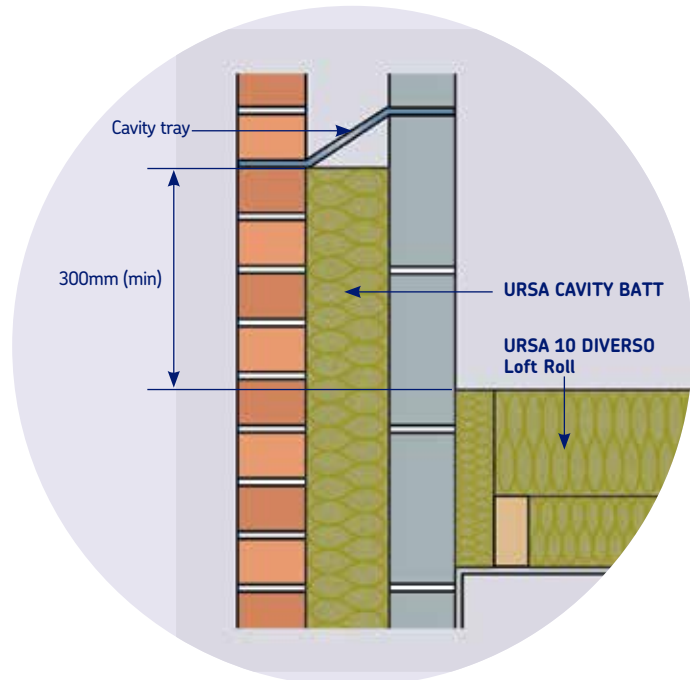
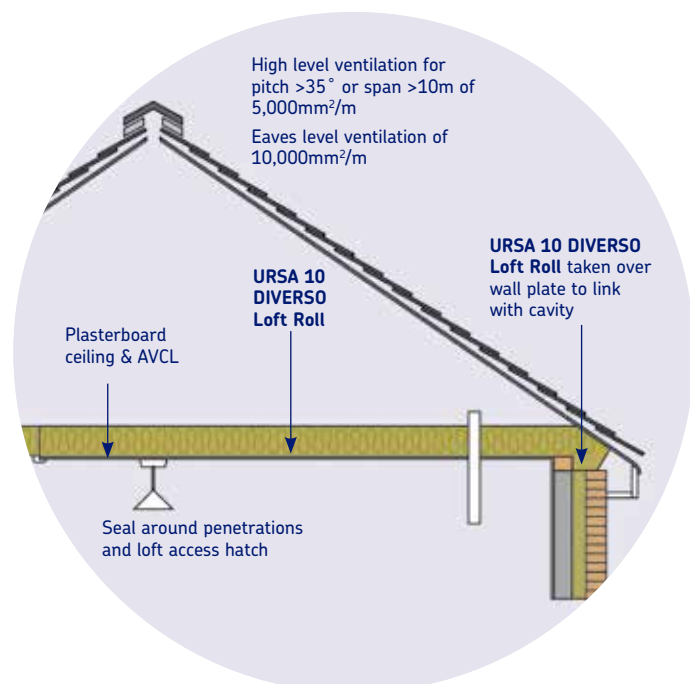


Figure 2 – HR Underlay



**Type LR Underlay (Figure 3)** – these are the more recently introduced breather type membranes that have a water vapour resistance less than or equal to 0.25 MNs/g.

Ventilation of the roof void should be provided as follows:

- 7,000mm<sup>2</sup>/m, at low level, for normal ceilings.
- 3,000mm<sup>2</sup>/m, at low level, for well sealed ceilings.
- Alternatively, for well sealed ceilings, high level ventilation of 5,000mm<sup>2</sup>/m.

There are a number of Type LR underlays available that promote the energy efficiency of not providing any ventilation – as these are not covered by BS 5250 it is recommended that these products carry a suitable technical approval such as BBA certification. Further measures that should be taken include:

- Removal of the water vapour at source by the use of suitable ventilation and/or extract fans in high humidity areas.
- The use of a correctly detailed and carefully sealed air and vapour control layer (AVCL) (minimum 500g polythene sheet or foil backed plasterboard) to reduce the amount of water vapour from the living area passing into the cold roof void.

#### Services

Tanks, pipes, vessels and ducts in the roof void must be insulated to avoid freezing and/or condensation problems. Insulation should be omitted from immediately below cold water tanks; this allows heat from inside the house to prevent the tank from freezing.

Recessed lighting should be incorporated into a sufficiently large enclosure in order to ensure continuity of insulation whilst still allowing heat to dissipate from the lamps. Compact fluorescent, low voltage and LED lamps generally run cooler than standard light fittings.

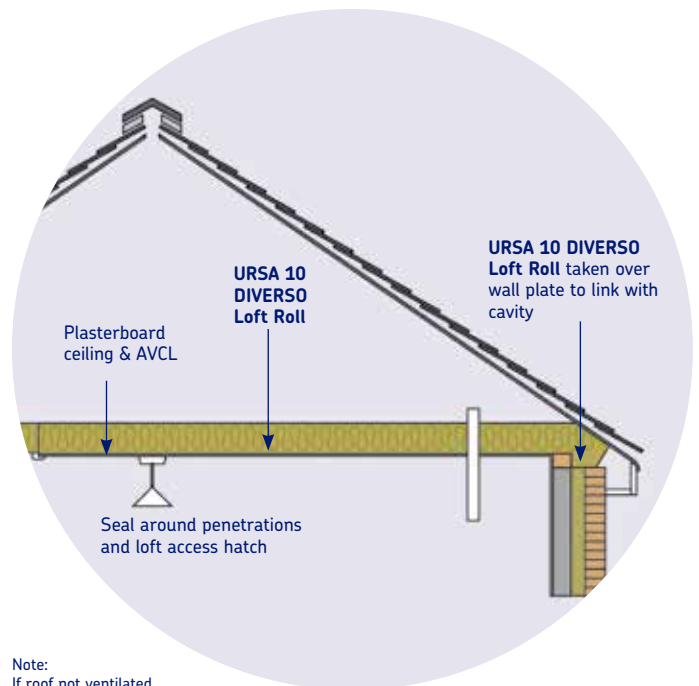
#### Wind Uplift

The wind uplift force exerted on the roof will vary according to geographical location, site location and building height. Calculations relating to the fixing pattern and batten dimensions should be made with reference to BS 5534.

#### Fire Performance

When used within a pitched roof constructed in accordance with this brochure **URSA 10 DIVERSO Loft Roll** will not prejudice the fire resistance properties of the roof and adds no fire load to the building. The slate or tiled finish will give the required external fire rating, whilst 12.5mm plasterboard will ensure the necessary fire protection internally. Fire stopping in the form of mineral fibre insulation should be used at party walls.

**Figure 3 – LR Underlay**



Note:  
If roof not ventilated  
LR underlay must be  
BBA approved.

# Installation

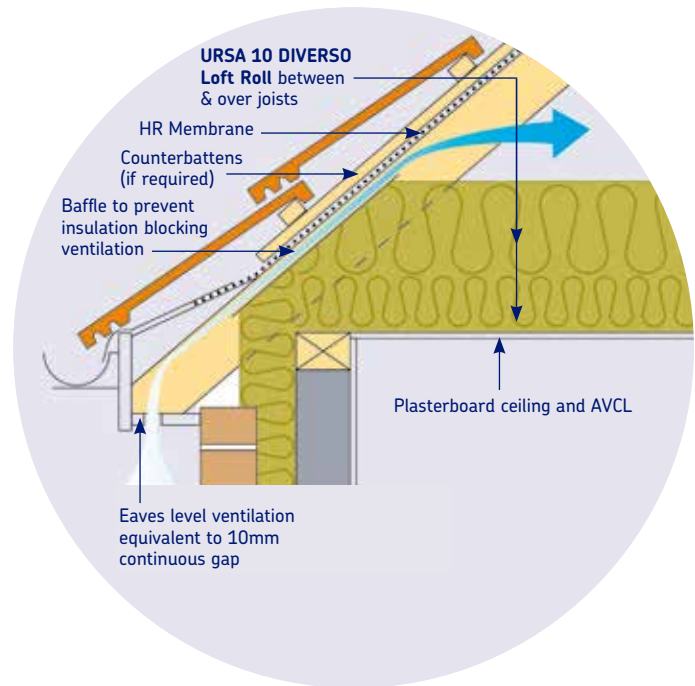
## Ventilated Roof Void (See Figure 4)

**URSA 10 DIVERSO Loft Roll** is designed to fit between and over the roof timbers at joist (horizontal ceiling) level.

### The usual procedure for construction is:

1. The roof trusses, HR Type sarking felt (bituminous or polythene), sarking boards (if applicable), tiling battens and tiles are all installed in the normal way in accordance with good practice and BS 5534.
2. There must be provision for roof space ventilation at the eaves and, if required, at the ridge also. Proprietary eaves ventilators should be used to maintain a clear path from the eaves vents into the roof void.
3. The plasterboard ceiling, incorporating an air and vapour control layer (AVCL) (500g polythene or foil backed plasterboard), is installed in the normal manner ensuring the AVCL is correctly detailed and sealed.
4. The first layer of **URSA 10 DIVERSO Loft Roll**, same depth as the joists, is laid between the joists.
5. The second layer of **URSA 10 DIVERSO Loft Roll** is laid at right angles to the joists with all edges closely butt jointed.
6. Ensure that the loft insulation continues over the wall plate to provide continuity with the wall insulation and is tight against any eaves ventilator units.
7. Ensure that any penetrations through the ceiling, especially if formed by following trades, are correctly sealed to ensure an air and vapour tight ceiling.

**Figure 4 – Ventilated Roof Void**



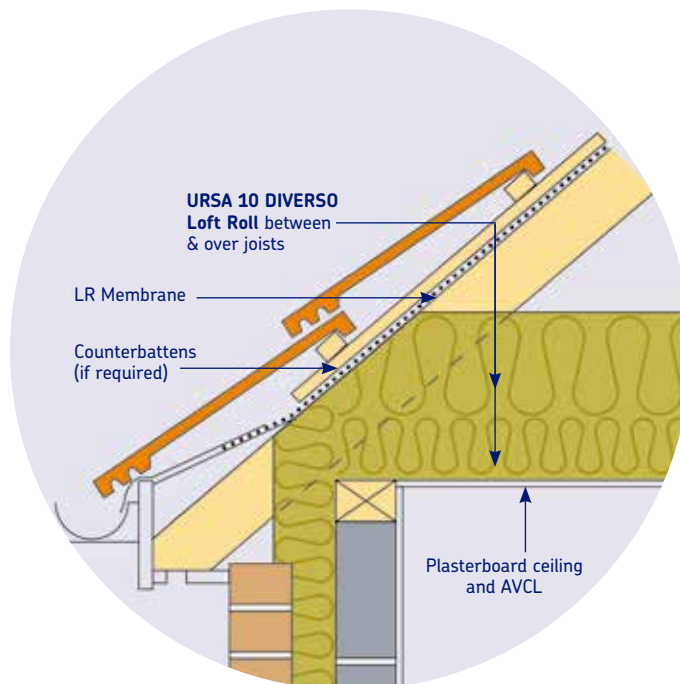
### Non-Ventilated Roof Void (See Figure 5)

**URSA 10 DIVERSO Loft Roll** is designed to fit between and over the roof timbers at joist (horizontal ceiling) level. The principle of this detail is that ventilation is not required; instead reliance is placed on the water vapour permeability of the sarking membrane. The system is therefore dependant upon the use of a LR Type membrane. This construction has the added benefit of the roof void remaining clean and free from wind borne dust and dirt.

#### The usual procedure for construction is:

1. The roof trusses, LR Type (breather) membrane, tiling battens and tiles are all installed in the normal way in accordance with good practice and BS 5534.
2. The LR Type membrane must be covered by a suitable technical approval such as BBA certification and be installed in accordance with that approval.
3. When using man-made or natural slates (or other tiles that are relatively airtight) counterbattens should be used in order to ventilate the airspace directly below the slates/tiles.
4. The plasterboard ceiling, incorporating an air and vapour control layer (AVCL) (500g polythene or foil backed plasterboard), is installed in the normal manner ensuring the AVCL is correctly detailed and sealed.
5. The first layer of **URSA 10 DIVERSO Loft Roll**, same depth as the joists, is laid between the joists.
6. The second layer of **URSA 10 DIVERSO Loft Roll** is laid at right angles to the joists with all edges closely butt jointed.
7. Ensure that the loft insulation continues over the wall plate to provide continuity with the wall insulation and is tight against any eaves ventilator units.
8. Ensure that any penetrations through the ceiling, especially if formed by following trades, are correctly sealed to ensure an air and vapour tight ceiling.

Figure 5 – Non-Ventilated Void



# Installation

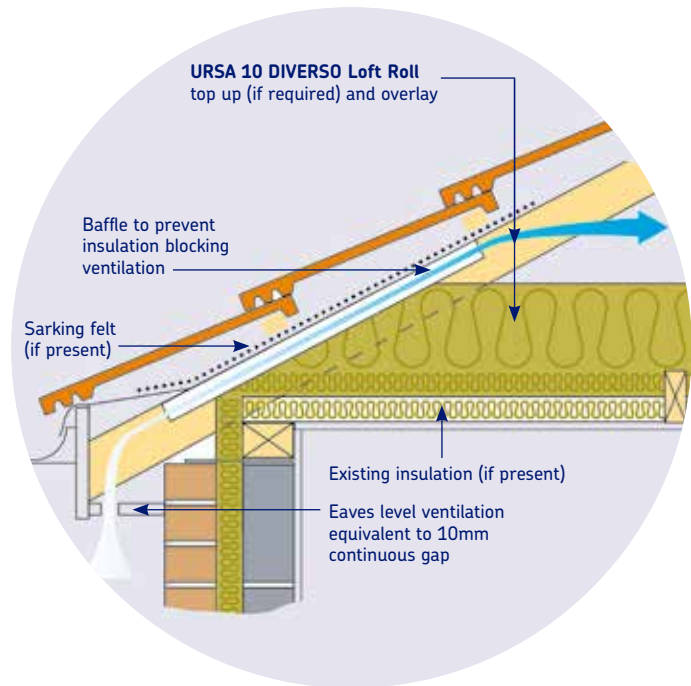
## Upgrading Existing Roofs (See Figure 6)

**URSA 10 DIVERSO Loft Roll** is designed to fit between and over the roof timbers at joist (horizontal ceiling) level. In existing buildings there may be a minimal insulation thickness already installed between the roof joists.

### The usual procedure for construction is:

1. The first layer of **URSA 10 DIVERSO Loft Roll**, same depth as the joists, is laid between the joists. If there is already some insulation add further **URSA 10 DIVERSO Loft Roll** between the roof joists to fully fill the depth of the joist.
2. The second layer of **URSA 10 DIVERSO Loft Roll**, is laid at right angles to the joists with all edges closely butt jointed.
3. There must be provision for roof space ventilation at the eaves and, if required, at the ridge also. Proprietary eaves ventilators should be used to maintain a clear path from the eaves vents into the roof void.
4. Ensure that the loft insulation continues over the wall plate to provide continuity with the wall insulation and is tight against any eaves ventilator units.
5. Ensure that any penetrations through the ceiling, especially if formed by following trades, are correctly sealed to ensure an air and vapour tight ceiling.

Figure 6 – Loft Insulation Upgrade





# 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.

A U-value of 0.12 W/m<sup>2</sup>K or better will help ensure Building Regulation compliance.

## URSA 10 DIVERSO Joist Level Insulation

URSA 10 DIVERSO Loft Roll (mm)	U-Value (W/m <sup>2</sup> K) (joists @ 600mm c/c)	U-Value (W/m <sup>2</sup> K) (joists @ 400mm c/c)
2 x 200	0.12	0.12
3 x 150	0.10	0.10
3 x 200	0.08	0.08

In two layer options, the first figure is between joist thickness, the second is the over joist thickness.

The additional layer of **URSA 10 DIVERSO Loft Roll** over the joists increases the thermal performance, masks the thermal bridge effect of the timbers and helps reduce the incidence of pattern staining.

# Technical Details

## Specification Clause

The pitched roof ceiling level insulation shall be multiple layers of **URSA 10 DIVERSO Loft Roll** mineral wool insulation, total thickness .....mm thick.

The first layer, .....mm thick and of suitable width is laid between the roof joists. The subsequent layers of insulation, .....mm thick, are cross laid over the joists at right angles to the first layer. Continue the insulation over the wall plate and ensure all joints are tightly butted. The insulation is to be installed as work proceeds in accordance with URSA UK Ltd instructions.



## Thermal Conductivity

Declared thermal conductivity of **URSA 10 DIVERSO Loft Roll** is 0.044 W/mK.

Declared thermal conductivity tested to BS EN 13162.

## Density

Nominal density of **URSA 10 DIVERSO Loft Roll** is 10 kg/m<sup>3</sup>.

## Reaction to Fire

Euroclass A1 to BS EN 13501-1.

## Moisture Vapour Transmission

**URSA 10 DIVERSO Loft Roll** has minimal resistance to the passage of water vapour, thus allowing the roof 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 10 DIVERSO Loft Roll

Dimensions	
Thickness (mm)	Width* (mm)
150	1140
200	1140

\* Perforated for 2 x 570mm or 3 x 380mm wide rolls.

## 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 rolls should be stored clear of the ground, on a clean level surface and 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 10 DIVERSO Loft Roll** is available nationally through insulation distributors and builders' merchants.

### **References**

The Building Regulations and supporting documents.

NHBC Standards (NHBC).

CIBSE Guide A3 - Thermal Properties of Buildings and Components.

BS 5803 Thermal Insulation for use in Pitched Roof Spaces in Dwellings.

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

BS 9250 Code of Practice for the Airtightness of Ceilings in Pitched Roofs.

BS EN 1991, Eurocode 1; Actions on Structures.

BS 5534 Code of Practice for Slating and Tiling.

BS 8000 Workmanship on Building Sites. Part 6 Code of Practice for Slating and Tiling of Roofs and Claddings.

BRE Digests, Information Papers and Good Building Guides.

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