



URSA GLASSWOOL®



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URSA TF Roll Rafter Level Insulation for Pitched Roofs

The Company

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.

URSA is the number two manufacturer of glass wool and extruded polystyrene products in Europe and in terms of sales, the largest business unit of the URALITA Group.

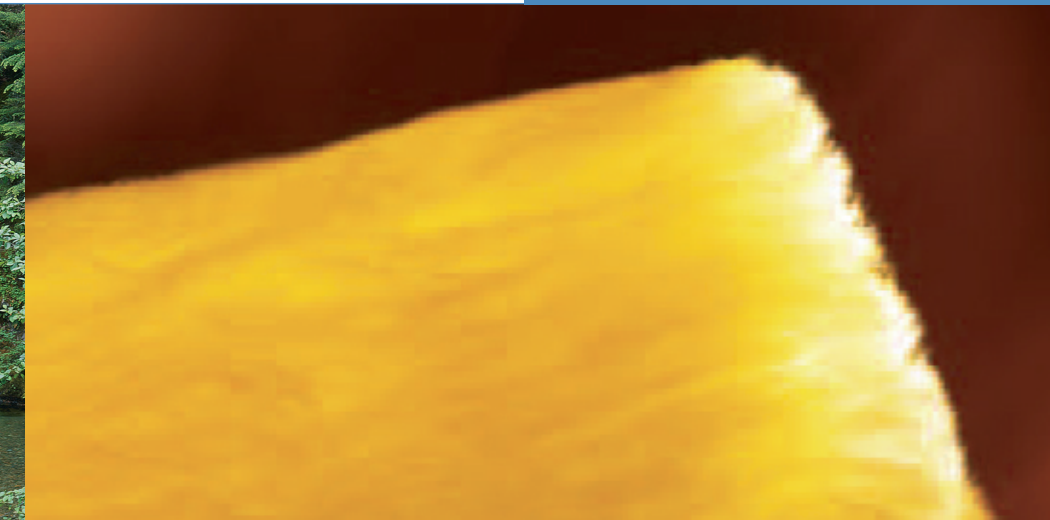
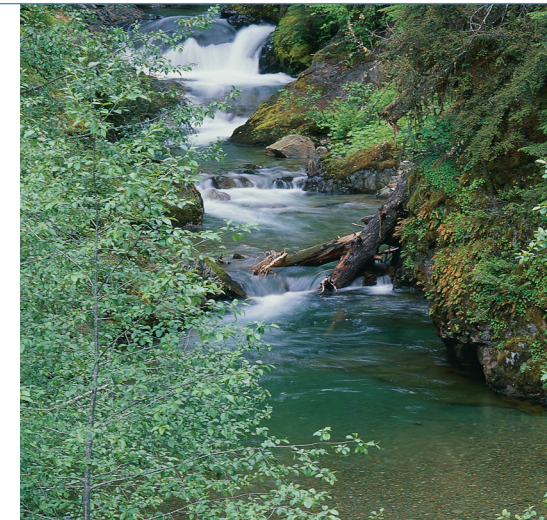
The **URALITA** Group is a Spanish multinational company that started operations in 1907 and is therefore one of the oldest companies in the European building materials industry. With 37 production sites in 11 countries, the **URALITA** Group generated sales of €700 million in 2009. The other three Building Materials divisions (Gypsum, Roofing and Piping Systems) and the Chemicals division of the Group are leaders in the southern European markets.

At 14 production sites **URSA** has more than 1,800 employees generating sales revenues of over €400 million.

URSA GLASSWOOL® is manufactured in Spain, France and Belgium, at two sites in Germany, in Slovenia, Hungary and Poland as well as in two Russian plants. Our closely-woven network of sales offices stretches across Europe and Russia. Almost everywhere **URSA** is amongst the market leaders. In Russia and in a number of other Eastern European countries, we are number one in the glasswool segment. We have also enjoyed a strong position particularly on the growth markets of the new EU partner countries from the very beginning.

URSA TF Roll

URSA TF Roll is a lightweight, non-combustible, unfaced glass mineral wool product for use in warm pitched roof spaces. It has a thermal conductivity of 0.035 W/mK.



Benefits

Quality

Outstanding product quality manufactured to ISO 9001 Quality Systems.

Ozone friendly

Glass wool products do not contain or use in their manufacture ozone depleting chemicals such as CFCs and HCFCs. The Ozone Depletion Potential (ODP) is zero.

Global warming potential

URSA TF 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 140mm of **URSA TF Roll** and suitable thermal laminate plasterboard.

Increased usable space

The roof void becomes part of the habitable accommodation.

Acoustic

URSA TF Roll has excellent sound insulation characteristics and enhances the acoustic comfort of the building.

Environment

Glass wool is manufactured from an abundant, sustainable resource and may utilise up to 80% post consumer glass waste.

Handling

URSA TF 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 TF Roll is rot-proof, durable and maintenance free. It is non-hygroscopic and will not slump in normal use.

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



Design

Warm Roof Space

Insulation at rafter level has the distinct advantage of offering additional living or storage space without increasing the 'foot print' of the building. As the roof space is kept warm there is no need to provide additional insulation to water services within the void.

Insulation at rafter level falls into three main categories:

- Cold Roof (Unventilated) - a cold roof construction allowing the full depth of the rafter to be used but requiring the use of a vapour permeable sarking membrane. Further insulation can be added under the rafters, ceiling height permitting, which masks the thermal bridge effect of the timbers improving the U-value and reducing the possibility of pattern staining occurring.
- Cold Roof (Ventilated) - a traditional cold roof using bitumen or polythene based sarking felt requiring both eaves to ridge ventilation (50mm minimum airspace) and a vapour control layer. Again insulation can be added under the rafters to mask the thermal bridge effect of the timbers.

- Warm Roof (Unventilated) - a warm roof construction allowing the full depth of the rafter to be used but requiring the use of a vapour permeable sarking membrane. Insulation is also used over the rafters which masks the thermal bridge effect of the timbers improving the U-value and reducing the possibility of pattern staining occurring.

Thermal Bridging

Ensure that the **URSA TF Roll** is continuous and forms a tight joint at details such as between rafters, at ridges, valleys and hips. Where the timber floor meets the sloping ceiling or wall it is important to limit air infiltration by sealing around the perimeter of the floor at the skirting board. Expanding foam and/or mastic type sealants should be used under the skirting to seal the floor edge.

Limiting Air Infiltration

The plasterboard ceiling should be installed 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 vapour control layer will further 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 – these are the more traditional bitumen or polythene based products that have a water vapour resistance greater than 0.25 MNs/g. A 50mm ventilated air space must be provided between the insulation and the underlay (this space may reduce to a minimum of 25mm at the centre of the underlay drape).

Ventilation of the roof void must be provided as follows:

- 25mm x eaves length, at low level.
- 5mm x eaves length, at high level (on both sides if the ridge board separates the roof into two sections).

Type LR Underlay – these are breather type membranes that have a water vapour resistance less than or equal to 0.25 MNs/g. There is normally no need to provide a ventilated void between the insulation and the underlay but sufficient space should be left to allow a slight drape in the membrane.

If the roof covering is relatively air tight, for example man made artificial slates, counterbattens should be used to allow ventilation above the underlay. In domestic type applications ventilation of the batten cavity should be provided as follows:

- 7mm x eaves length, at low level, for normal ceilings.
- 3mm x eaves length, at low level, for well sealed ceilings.
- 5mm ventilation slot at high level.

For larger roofs (schools, hospitals, supermarkets etc) increased ventilation of the batten cavity should be provided as follows:

- 10mm x eaves length, at low level, for normal ceilings.

- 5mm x eaves length, at low level, for well sealed ceilings.
- 5mm ventilation slot at high level.

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 vapour control layer (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.

Design

Installation

Figure 1 – Between Rafter Insulation (Unventilated) - Eaves Detail

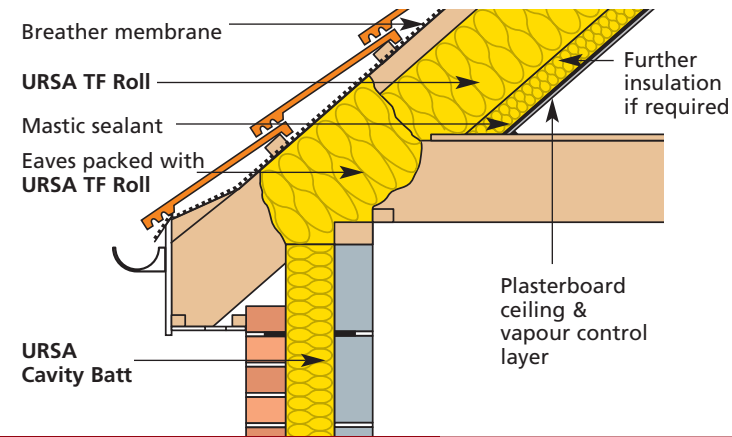
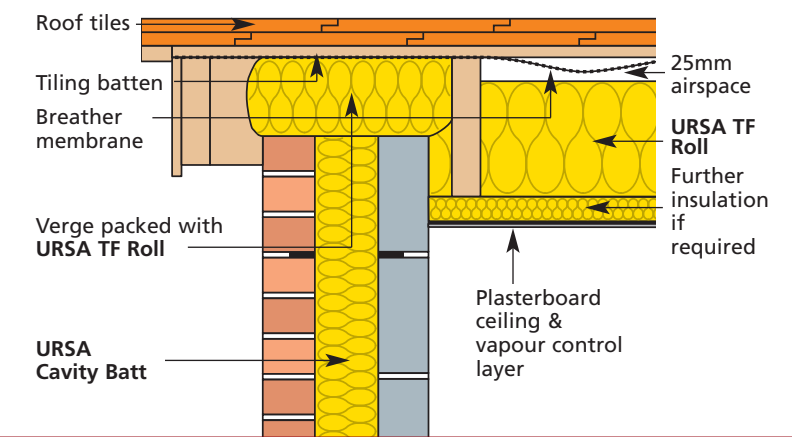


Figure 2 – Between Rafter Insulation (Unventilated) - Verges Detail



Acoustic Performance

URSA TF Roll, minimum fitted between the rafters will help prevent noise transmission through or over the pitched roof structure. URSA TF Roll in this application complies with the various wall/roof junctions shown in Robust Details Part E.

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 TF 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, SAA, 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.

Between Rafter Insulation – Unventilated (Figures 1 & 2)

The usual procedure for construction is:

1. Complete the tiling, battening and felting in the normal manner using a British Board of Agrément approved LR (breather) type underlay.
2. Fit the URSA TF Roll between the rafters ensuring there are no gaps between the rafters and between sections of insulation.
3. Ensure that a 25mm (minimum) airspace is maintained above the insulation to allow a drape in the underlay.
4. Alternatively the LR type underlay may be pulled taut over the rafters and the full depth of the rafter filled with insulation. To ensure drainage above the membrane counterbattens, 38 x 50mm, must be nailed to the rafters at 300mm centres ensuring a minimum of 38mm penetration of the fixing into the rafter. The tiling battens and tiles are then installed in the normal manner.
5. Continue the URSA TF Roll into the timber frame dwarf walls ensuring continuity of the wall and roof insulation.
6. If necessary further insulation may be added internal to the timber structure to both enhance the thermal performance and to mask the thermal bridge effect of the timbers.
7. A vapour control layer is required with this form of roof construction; this may be either polythene sheet or foil-backed plasterboard.
8. The plasterboard internal finish is fitted in the normal manner though longer fixings are required when using a two-layer insulation system.

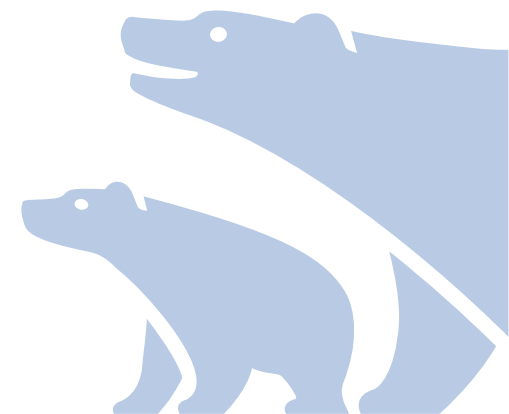


Figure 3 – Between Rafter Insulation (Ventilated) - Eaves Detail

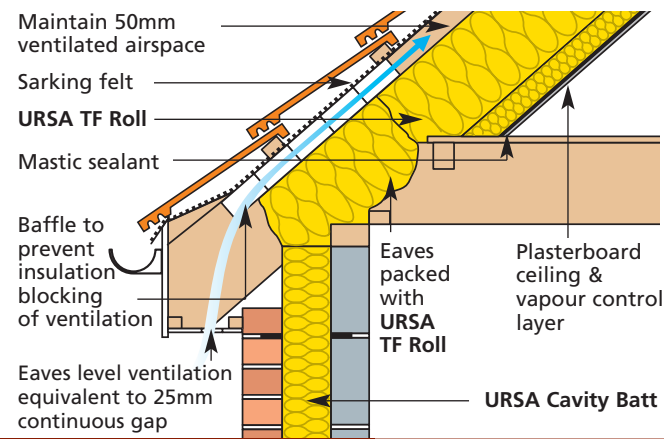
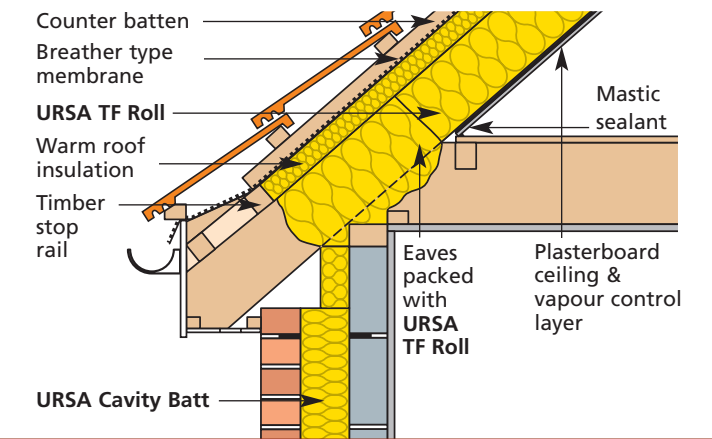


Figure 5 – Warm Roof Insulation - Verge Detail

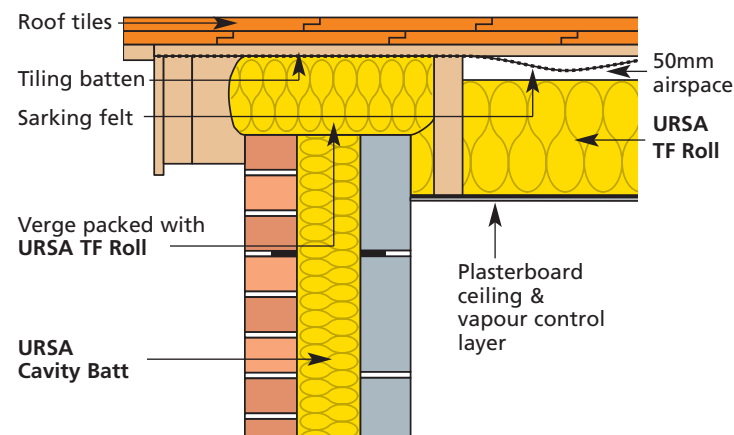


Between Rafter Insulation – Ventilated (Figures 3 & 4)

The usual procedure for construction is:

1. Complete the tiling, battening and felting in the normal manner using type HR underlay. Ensure that provision is made for eaves to ridge ventilation in accordance with BS 5250 (see above).
2. Fit the **URSA TF Roll** between the rafters ensuring there are no gaps between the rafters and between sections of insulation.
3. Ensure that a 50mm airspace is maintained above the insulation.
4. Continue the **URSA TF Roll** into the timber frame dwarf walls ensuring continuity of the wall and roof insulation.
5. If necessary further insulation may be added internal to the timber structure to both enhance the thermal performance and to mask the thermal bridge effect of the timbers.
6. A vapour control layer is required with this form of roof construction; this may be either polythene sheet or foil-backed plasterboard.
7. The plasterboard internal finish is fitted in the normal manner though longer fixings are required when using a two-layer insulation system.

Figure 4 – Between Rafter Insulation (Ventilated) - Verge Detail

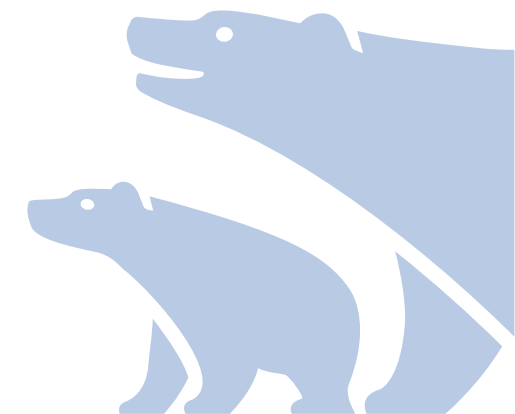
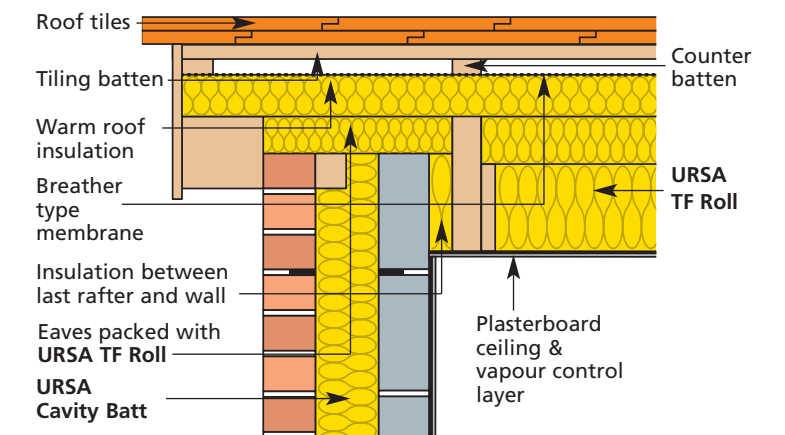


Between Rafter Insulation – Warm Roof Construction (Figures 5 & 6)

The usual procedure for construction is:

1. Install the warm roof (over rafter) insulation and secure using counterbattens in accordance with the manufacturer's instructions and complete the tiling, battening and felting using a British Board of Agrément approved LR (breather) type underlay.
2. Once the roof is watertight and working from inside the building fit the **URSA TF Roll** between the rafters. Ensure the depth of the rafters is fully filled and there are no gaps between the rafters and between sections of insulation.
3. Continue the **URSA TF Roll** into the timber frame dwarf walls ensuring continuity of the wall and roof insulation.
4. A vapour control layer is generally not required with this form of warm roof construction. In high humidity applications, e.g. swimming pools, laundries, commercial kitchens etc a vapour control layer is normally required; this may be either a polythene sheet or high performance polythene/aluminium foil laminate. The design should be checked using BS 5250.
5. The plasterboard internal finish is fitted in the normal manner.

Figure 6 – Warm Roof Insulation - Verge Detail



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 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 new build a U-value of 0.16 W/m²K or better will help ensure compliance whilst in extensions and refurbishment work a U-value of 0.18 W/m²K is required. In the cold roof details additional insulation is used **under** the rafters. In warm roofs the additional insulation is fixed **above** the rafters.

Rafter Level Insulation (Cold Roof – Unventilated)

URSA TF ROLL	U-Value (W/m ² K) (rafters @ 600mm c/c)	U-Value (W/m ² K) (rafters @ 450mm c/c)
90mm	0.38	0.40
90mm & 25mm PUR	0.27	0.27
90mm & 35mm PUR	0.24	0.24
90mm & 50mm PUR	0.21	0.21
140mm	0.26	0.27
140mm & 25mm PUR	0.20	0.21
140mm & 35mm PUR	0.18	0.19
140mm & 50mm PUR	0.16	0.17

Rafter Level Insulation (Cold Roof – Ventilated)

URSA TF ROLL	U-Value (W/m ² K) (rafters @ 600mm c/c)	U-Value (W/m ² K) (rafters @ 450mm c/c)
90mm	0.41	0.43
90mm & 25mm PUR	0.28	0.29
90mm & 35mm PUR	0.25	0.26
90mm & 50mm PUR	0.21	0.22
140mm	0.28	0.29
140mm & 25mm PUR	0.21	0.22
140mm & 35mm PUR	0.19	0.20
140mm & 50mm PUR	0.17	0.17

Rafter Level Insulation (Warm Roof - Unventilated)

URSA TF ROLL	U-Value (W/m ² K) (rafters @ 600mm c/c)	U-Value (W/m ² K) (rafters @ 450mm c/c)
90mm & 25mm PUR	0.25	0.26
90mm & 35mm PUR	0.23	0.23
90mm & 50mm PUR	0.20	0.20
140mm & 25mm PUR	0.19	0.20
140mm & 35mm PUR	0.18	0.18
140mm & 50mm PUR	0.16	0.16

Please contact URSA Technical Services for alternative solutions and further information.

Technical Details

Specification Clause

The rafter level pitched roof insulation shall bemm thick **URSA TF Roll** glass wool insulation. 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

The declared thermal conductivity, λ_D-value, of **URSA TF Roll** is 0.035 W/mK when tested to BS EN 13162.

Density

Nominal density is 22 kg/m³.

Reaction to Fire

Euroclass A1 to BS EN 13501-1.

Moisture Vapour Transmission

URSA TF 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 0.84 kJ/kgK.

Durability

When correctly installed, **URSA TF Roll** is maintenance free and has an indefinite life at least equal to that of the building.

Storage

URSA TF Roll is 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 TF Roll is 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 TF Roll is 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 TF Roll is available nationally through insulation distributors and builders merchants.

Dimensions

URSA TF Roll is available in the following dimensions

Thickness (mm)	Length (m)	Width (mm)
90	4.50	2 x 570
140	3.00	2 x 570

Environmental Information

BRE Green Guide

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

Code for Sustainable Homes

All URSA glass wool products can assist in achieving full credits under the Code for Sustainable Homes including;

- Ene 1 – Dwelling Emission Rate.
- Ene 2 – Fabric Energy Efficiency.
- Mat 1 – Environmental Impact of Materials. BRE Green Guide A+ Rating.
- Mat 2 – Responsible Sourcing of Materials. Insulation products are specifically excluded.
- Pol 1- Global Warming Potential (GWP) of Insulants. Zero GWP.
- Hea 2 – Sound Insulation.

References

The Building Regulations and supporting documents. Thermal Insulation: avoiding risks (2002). Limiting Thermal Bridging and Air Leakage: Robust Construction Details for Dwellings and Similar Buildings (DTLR/DEFRA). CIBSE Guide A3 - Thermal Properties of Building Structures. BS 5250 Code of Practice for Control of Condensation in Buildings. 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 Guide.