Insulation for use in Timber and Metal Frame wall systems

External Timber and Metal Frame Walls
Design and 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.

Design

Construction Principles

There are three main forms of framed construction depending upon the position of the insulation:

- Cold Frame - all of the insulation is fitted within the depth of the studs which results in the timber/steel bridging the insulation. An insulated lining can be added internally to both improve the thermal performance and mask the thermal bridge effect (Figure 1).
- Warm Frame - the insulation is fitted externally to the framing, as a sheathing, to give a continuously insulated envelope. This form of construction has the advantages of preventing thermal bridging and being inherently safe from harmful condensation (Figure 2).
- Hybrid - insulation is fitted between the studs with an additional layer on the outside to reduce thermal bridging. The ratio of thermal resistance of each layer needs careful consideration to avoid interstitial condensation (Figure 3).

Limiting Air Infiltration

Make sure the **URSA FRAMETEC** or **URSA HOMETEC ROLL** is continuous and forms a tight joint at details such as corners.

Where a timber floor meets the wall it's important to limit air infiltration by sealing around the perimeter of the floor. Expanding foam and/or mastic type sealants should be used under the sole plate to seal the floor edge.
The polythene air and vapour control layer (AVCL) creates an additional air infiltration barrier.

Condensation

An air and vapour control layer (AVCL) is generally required when insulating between the studs, which can either be a polythene sheet (minimum 500g) or a foil-backed plasterboard. When using sheathing insulation, the structural frame is maintained at the same temperature as the inside of the building which means an air and vapour control layer (AVCL) may not be required. Surface condensation is generally not a problem with the correct choice of insulation thickness, heating system and ventilation.

Rainwater Penetration

Projections and discontinuities within the cavity such as changes in wall thickness or beams will require a cavity tray. If using sheathing insulation in conjunction with a cold pitched roof (insulation at horizontal ceiling level) the top edge of the insulation should be protected by a cavity tray.

Figure 1
Cold Frame Construction

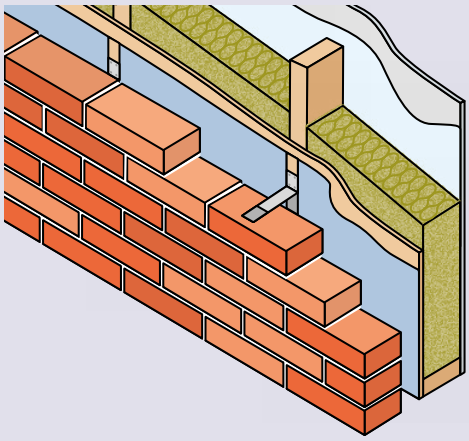


Figure 2
Warm Frame Construction

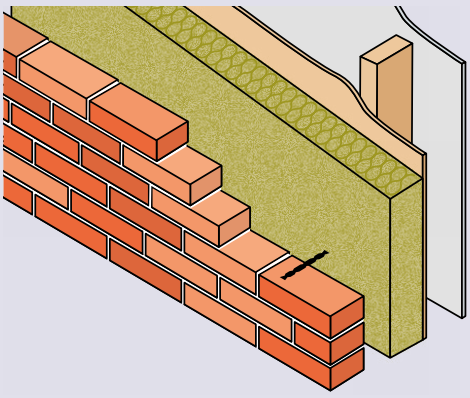
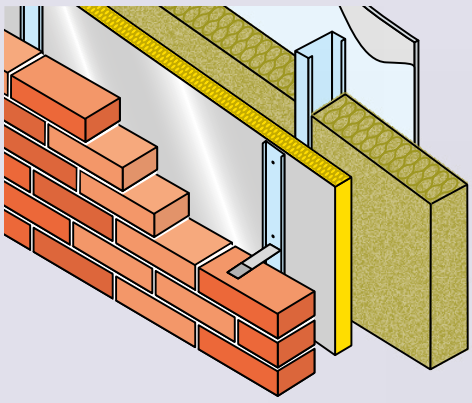


Figure 3
Hybrid Construction



Thermal Bridging

Insulation installed between studs will introduce a series of repeating thermal bridges which, along with the effect of lintels, noggins and sole and top plates, can significantly affect the calculated U-value as the framing may account for up to 20% of the wall area; the Building Regulations recommend a default of 15% framed area for calculation purposes.

Using an insulated sheathing is more efficient as it eliminates these causes of thermal bridging, and as the level of insulation increases it's vitally important to ensure continuity 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 or extending the sheathing insulation below the floor level, can reduce thermal bridging (Figures 4, 5, 6 & 7).

Figure 4
Wall/Floor Junction
Insulation below Slab

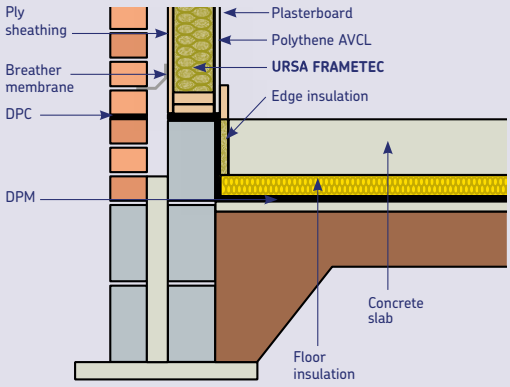


Figure 5
Wall/Floor Junction Insulation
above Slab (Timber Floor)

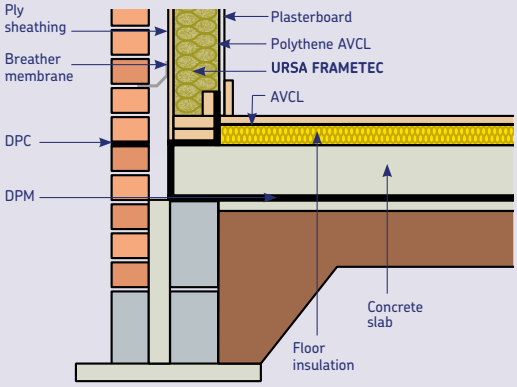


Figure6
Wall/Floor Junction Insulation
above Slab (Screed)

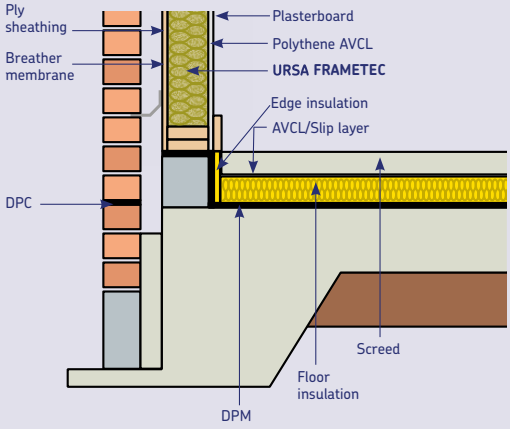
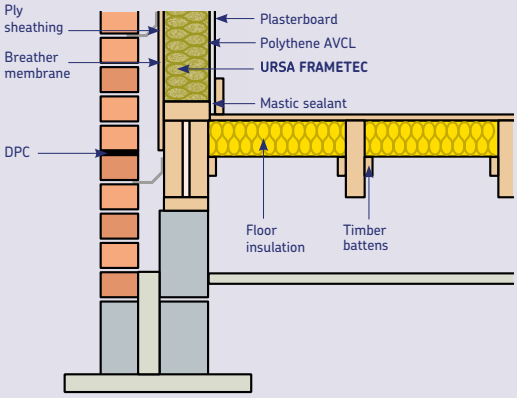


Figure 7
Wall/Floor Junction
(Timber Floor)



Thermal Bridging

Around door and window openings careful detailing of the insulation along with the use of proprietary insulated cavity closers can help to reduce thermal bridging (Figures 8 & 9).

In a cold roof construction the entire thickness of the loft insulation should extend over the head of the main wall panel to the sheathing board (Figures 10 & 11).

At gable walls with warm roof construction the insulation should be continued to the underside of the roof to ensure continuity (Figures 12 & 13).

Figure 8
Sill Detail

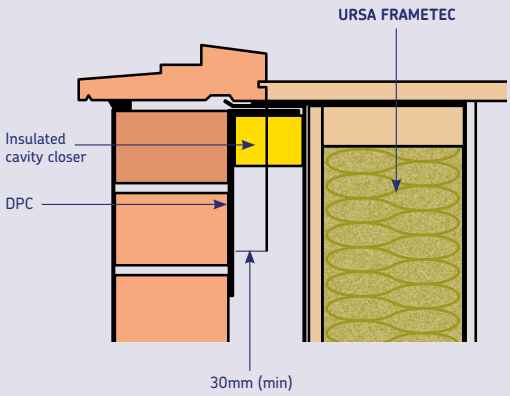


Figure 9
Jamb Detail

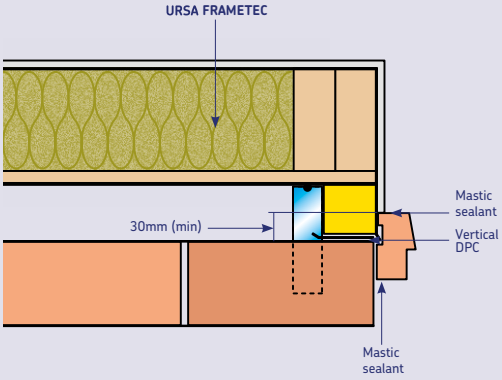


Figure 10
Cold Pitched Roof - Gable Detail

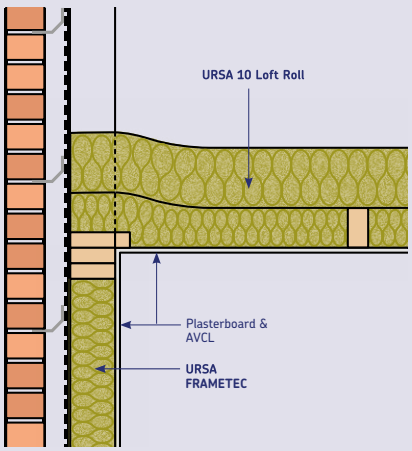


Figure 11
Cold Pitched Roof - Eaves Detail

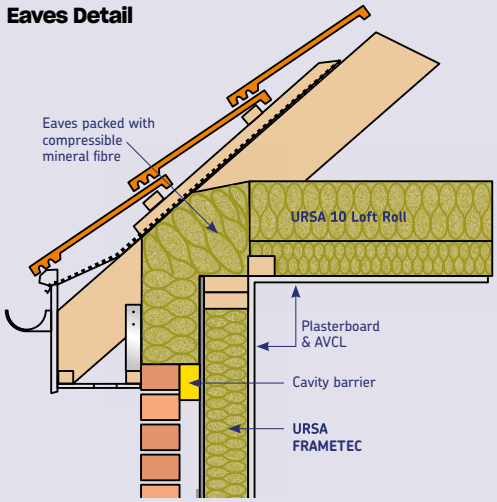


Figure 12
Warm Pitched Roof - Gable Verge Detail

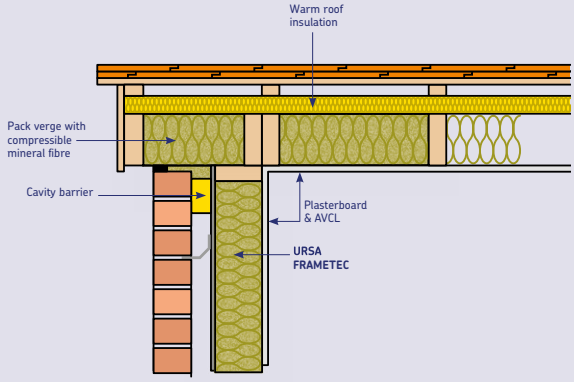
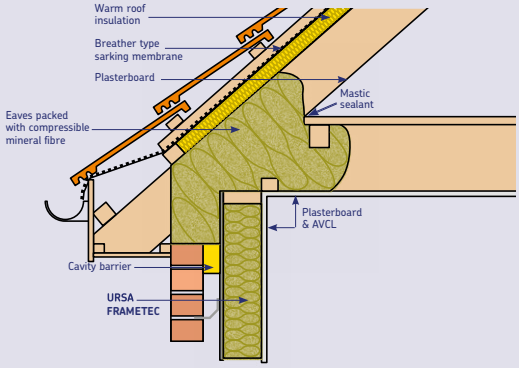


Figure 13
Warm Pitched Roof - Eaves Detail



Fire Performance

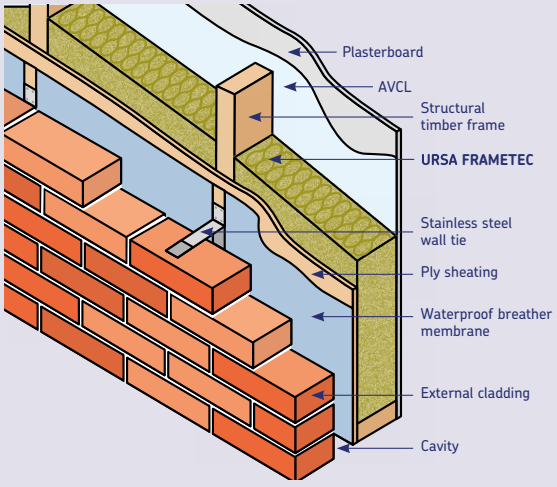
URSA FRAMETEC and URSA HOMETEC ROLL are deemed non-combustible with a fire classification of Euroclass A1 (the highest possible rating) when tested to EN 13501-1:2018 Reaction to Fire. Cavity barriers should be installed in accordance with Building Regulation requirements.

Installation - Insulation between Timber Studs

The standard procedure is:

1. The timber frame, OSB or plywood sheathing, breather membrane are all installed in accordance with manufacturer's instructions.
2. The external finish of brickwork, tile hanging or external render installed in accordance with manufacturer's instructions.
3. The URSA FRAMETEC is fitted tightly between the studs, normally fully filling the stud depth.
4. The internal lining of air and vapour control layer (AVCL) and plasterboard are then fixed in the normal manner.
5. An enhanced U-value may be achieved by installing additional insulation internally or externally to the timber frame. Check with the timber frame manufacturer for specific requirements and details.

Figure 14



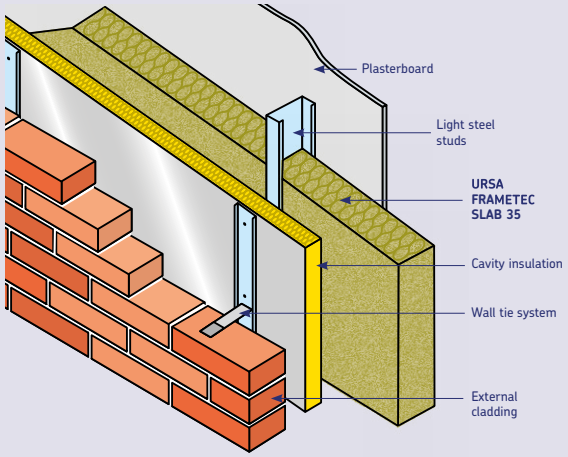
Installation – Insulation between Metal Studs

The standard procedure is:

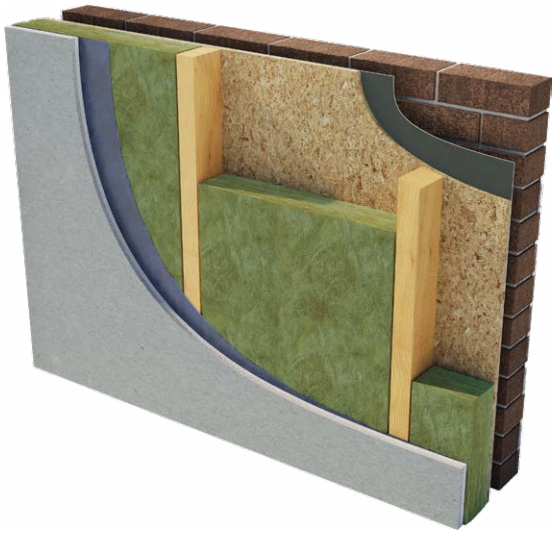
1. The metal framing is installed in accordance with the manufacturer's instructions.
2. The external finish of brickwork, tile hanging or external render are installed in accordance with the manufacturer's instructions.
3. Install the URSA FRAMETEC SLAB 35 between the studs, ensuring the slabs are tightly jointed and there are no gaps. Alternatively use URSA HOMETEC ROLL cut to width to suit the stud centres, normally 600mm, and fit tightly between the studs.
4. The internal lining of air and vapour control layer (AVCL) and plasterboard are then fixed in the normal manner.
5. An enhanced U-value may be achieved by installing additional, partial fill, cavity wall insulation external to the steel frame. Check with the steel frame manufacturer for specific requirements and details.

Other forms of external finish such as tile hanging, render, timber weatherboarding or PVC-U cladding are also suitable and should be fixed in accordance with the manufacturer's instructions.

Figure 15
Insulated Metal Frame



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 and so on, 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_2 emissions from the building - this gives considerable design flexibility with no specific U-values, except the worst allowable, that must be achieved.

Typical Construction - External Timber Frame Walls

Description	Thickness (mm)	Thermal Conductivity (W/mK)	Thermal Resistance (m^2K/W)
Outer Brickwork	102.50		
Unvented low emissivity cavity	50.00		0.770
Reflective Breather Membrane			
Oriented strandboard (OSB)	9.00	0.130	
URSA FRAMTEC between timber studs*	(see table below)		
Reflective Vapour Control Layer (VCL)			
Unvented low emissivity cavity between timber battens**	25.00		0.780
Standard Plasterboard or Insulated Plasterboard	(see table below)		

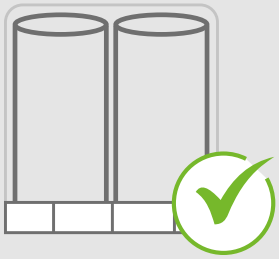
Insulation and stud thickness (mm)	URSA Insulation	12.5mm Standard Plasterboard (0.19W/mK)	37.5mm Siniat Thermal PIR Board ($1.20m^2K/WK$)	52.5mm Siniat Thermal PIR Board ($1.89m^2K/WK$)
140	URSA FRAMETEC 32	0.20	0.16	0.14
140	URSA FRAMETEC SLAB 32	0.20	0.16	0.14
140	URSA FRAMETEC 35	0.20	0.16	0.15
90	URSA FRAMETEC 32	0.25	0.19	0.17
90	URSA FRAMETEC SLAB 32	0.25	0.19	0.17
90	URSA FRAMETEC 35	0.26	0.20	0.18

*Timber bridging is assumed as 15%. Bridge thermal conductivity of 0.12W/mK

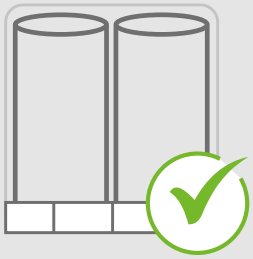
**Timber bridging is assumed as 9.50%. Bridge thermal conductivity of 0.12W/mk

For any U-Value calculations for alternative construction build-ups, please contact our Technical Team on **technicalursa.uk@etexgroup.com**

How to store our insulation

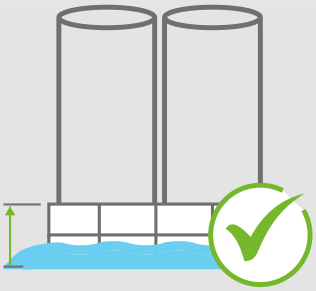


Keep the product covered and fully wrapped on a pallet until required.

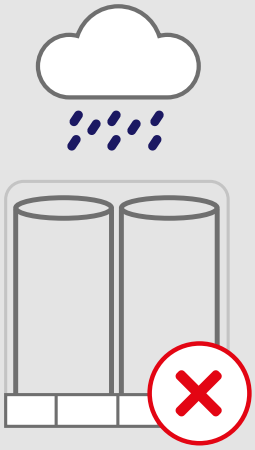


A pallet that is wrapped and has an undamaged hood can be stored outside when indoor space is unavailable, provided it is kept off the ground and protected from the elements. This should only be for short-term storage and not in severe weather conditions.

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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