KNAUF INSULATION

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Loft Roll
Installation Guide

WHAT YOU NEED TO KNOW

Interactive document

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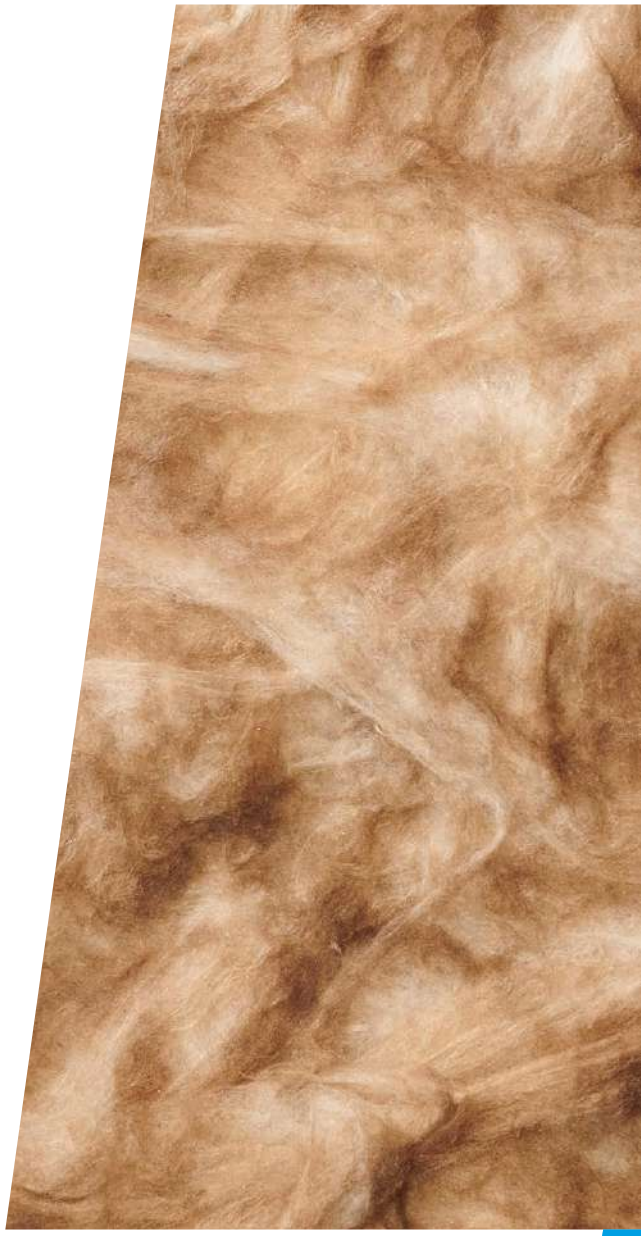
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THIS GUIDE DETAILS A PROCESS OF INSULATING A COLD PITCHED ROOF AT CEILING LEVEL.

Loft insulation plays an important role in improving and maintaining the energy efficiency of a property by preventing heat loss through the roof.

Building regulations for loft insulation require a minimum depth of 270mm (350mm in Scotland), which could be achieved with two layers of insulation. However, increasing the thickness of insulation maximises energy efficiency. In new build properties it typically reaches a depth of 400-500mm. This is achieved by using 3 layers of insulation, with the first layer laid lengthwise between ceiling joists and subsequent layers laid at right angles to the ceiling joists, to prevent thermal bridging and unwanted heat loss.

Our loft insulation solutions provide excellent levels of thermal resistancein relation to cost of installation as in this application thickness is largely unrestricted.



TYPICAL U-VALUES

U-value, or thermal transmittance, is the rate of transfer of heat through a material, divided by the difference in temperature across that material. The better insulator a material is, the lower its U-value. Below are the typical U-values for Knauf Insulation Loft Rolls.

LOFT ROLL 44

U-value (W/m^2K)	**Thickness** (mm)		
	Between joists	**Over joists**	**Total thickness**
0.09	100	400 (2 x 200)	500
0.10	100	350 (150+200)	450
0.11	100	300 (2 x 150)	400
0.12	100	250 (100+150)	350
0.14-0.15**	100	200	300
0.16	100	170	270

Note: Joist sizes assumed to be 100 x 47mm at 400mm or 600mm centres, default timber bridge fraction, 12.8% or 8.8% as per BR443. Assumed 12.5 mm standard plasterboard and cold ventilated roof with felt or sarking boards. All dimensions are nominal. ** U-value of 0.14 (W/m^2K) is achieved with joists at 600mm centres; U-value of 0.15 (W/m^2K) with joists at 400mm centres.

LOFT ROLL 40

U-value (W/m^2K)	**Thickness** (mm)		
	Between joists	**Over joists**	**Total thickness**
0.08	100	400 (2 x 200)	500
0.09	100	350 (150+200)	450
0.10	100	300 (2 x 150)	400
0.12	100	250 (100+150)	350
0.13	100	200	300
0.16	100	150	250

Note* Joist sizes assumed to be 100 x 47mm at 400mm centres, default bridge fraction, 12.8% as per BR443. Assumed 12.5 mm standard plasterboard and cold ventilated roof with felt or sarking boards. All dimensions are nominal.

For any U-value calculations for alternative build-ups, please contact our Technical Support Team on 01744 766 666 or visit our online tool at **knaufinsulation.co.uk/uvalue-calculator**

For written U-value calculations, please email details of your full construction build-up to **technical.uk@knaufinsulation.com** and we will respond accordingly to meet your requirements.

STORAGE ON SITE

Loft Rolls should be stored properly and handled in such a way as to ensure that the products remain clean and undamaged.

The polythene packs (4LDPE) / shrink-wrapped pallets used for the supply of Loft Rolls are designed for short-term protection only. For longer term protection on site, the product should either be stored indoors or under cover and off the ground. Loft Rolls should not be left permanently exposed to the elements.

If the main hood is removed or damaged, the remaining packs should be kept under cover indoors or protected from the elements by a weatherproof cover. In coastal locations where weather is more extreme and bird damage is more common, use additional covering or store indoors.

The product must be protected from prolonged exposure to sunlight, and stored dry with the pallets kept flat.

Loft Rolls are light and easy to handle. If damaged, the product should be discarded.
Damaged, contaminated or wet product must not be used.

During construction exposed areas of rolls should always be covered at the end of a day's work or in heavy rain. Polyethylene covers should be used to provide protection and prevent work from becoming saturated.



UNPACKING

We use the industry's best compression technology (10:1 ratio) to maximise the amount of insulation you get in a pack allowing for more efficient storage, handling & transport.

Split the pack open keeping a safe distance (we recommend opening the packaging in the loft).
The compression packaging is designed to allow the product to expand once it is opened.

All of our product packaging is low-density polyethylene (LDPE4) made with 30-50% recycled plastic content, which is fully recyclable.

SAFETY EQUIPMENT AND TOOLS

It is recommended that the following tools and equipment should be used to insulate your loft correctly.

Moving around the loft: crawl boards, bump cap.

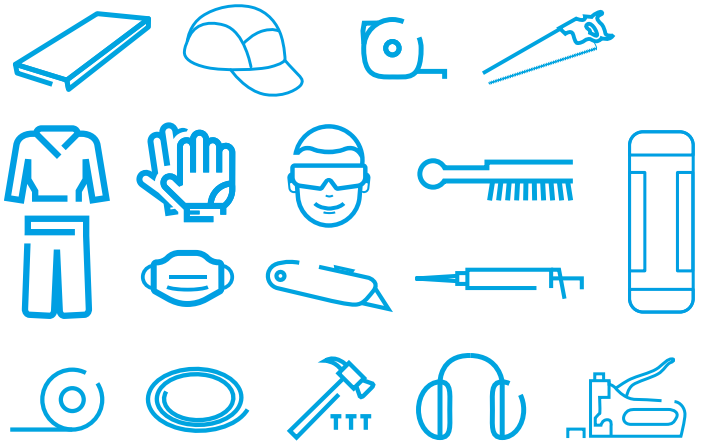
Preparation: tape measure, saw.

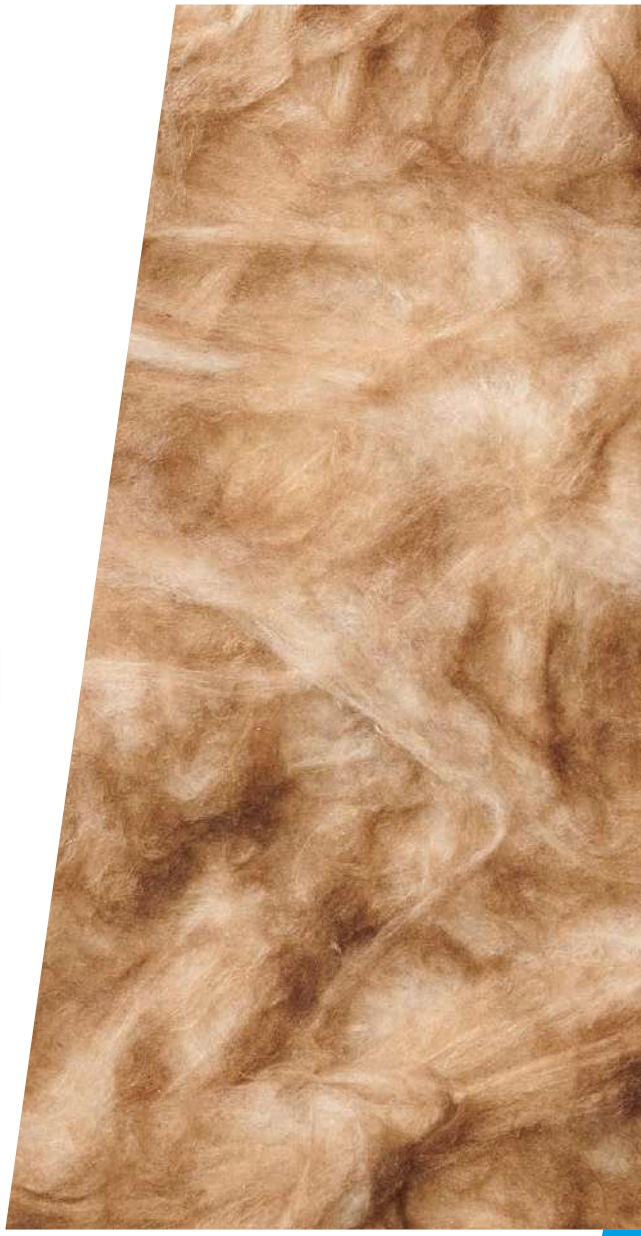
Laying loft insulation: gloves, mask (FFP1 minimum), overalls, safety glasses, Loft Roll, knife.

Airtightness works: hand brush, sealant gun & sealant, tape.

Loft hatch (draught stripping): draught stripping, small panel pins, hammer, ear defenders.

Loft hatch (insulation): heavy duty plastic, Loft Roll, staple gun.





COLD VENTILATED LOFT INSULATED AT CEILING LEVEL



STAGE 1. PREPARATION

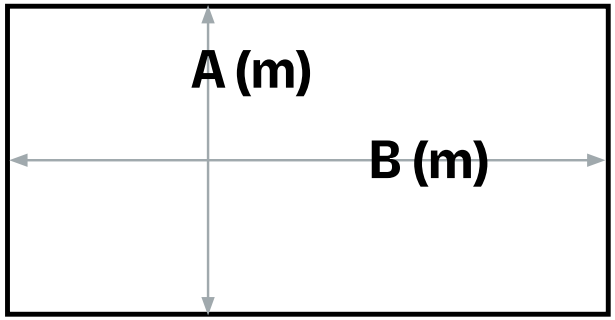
The following steps need to be taken before commencing work:

- Assess suitability and load-bearing capability of the loft floor to ensure safe installation.
- Make sure you've removed any stored items, so your loft space is empty.
- Measure the area of your loft and use the area per pack on the product label to calculate how many rolls you will need (see Diagram 1). Wherever the insulation meets the eaves, add approximately 30cm to the length of roll you think you'll need for the base layer. This will give you a little extra, to drop down and meet your wall insulation to maximise performance.
- Measure the gap between your joists (see Diagram 2). Combi-cut Loft Rolls are partially perforated at 2 x 600mm and 3 x 400mm for standard joist widths. If you have non-standard joist widths cut the roll accordingly.
- If your loft is partially insulated already, you only need to buy enough rolls to 'top up' your existing insulation.
- Determine the thickness of insulation required. This is achieved by fully-filling between joists and overlaying subsequent layers perpendicularly to the first layer.
- Check for electrical or TV cabling, water piping, ventilation provisions and other features that may need to be accounted for in your installation design. Read the 'Detailing Considerations' section prior to commencing installation.
- Plan for future access to all services and consider constructing a walkway.



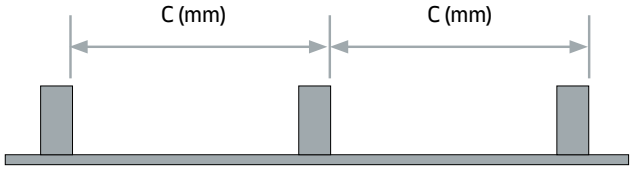


Diagram 1



A (m) x **B (m)**/ Area per pack (m^2) = Rolls needed for each layer

Diagram 2



STAGE 2. AIRTIGHTNESS

Seal any gaps where air could leak into the roof space from the heated space below. Typically, these could be lighting cables, extractor fans, soil pipes, and wall partitions. Apply a high-quality sealant and / or tape, such as those available from the Passivhaus Store: **phstore.co.uk**







STAGE 3. LAYING THE INSULATION

Step 1

With your insulation still in its packaging, cut the roll to your desired width (use the markers on the pack as a guide). After the first cut, you should be able to 'snap' the roll along the perforation by using your leg as a pivot and applying downward pressure either side.

Carefully open the insulation packaging once in the loft. Every time you roll out a new section, gently agitate the product to allow it to expand to its full thickness.

The first layer of insulation should fully fill the gap between joists, and be the full joist depth. Rolls should be closely butted, and the insulation cut neatly around any obstacles, such as soil vent pipes, to provide a consistent layer of insulation with no gaps.

Cut away any excess material as necessary.

Short sections (approx. 2m) cut from a longer roll will be easier to position at the eaves.





Step 2

Start from the eaves ensuring the ventilation path is not blocked. Reach into the eaves, curving the end of your insulation down around the edge of your loft floor into the eaves, until it meets the top of your wall insulation (if present). Repeat this process in each bay, until the eaves are fully insulated. Then, insulate the central loft space. Begin at the point furthest from the loft hatch, and work towards it, ensuring the insulation is evenly laid across the whole floor.





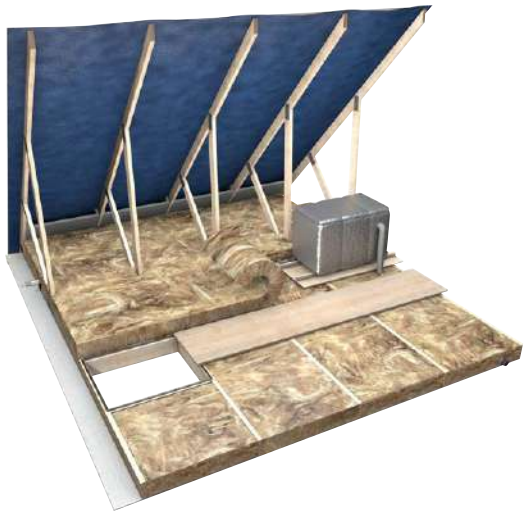


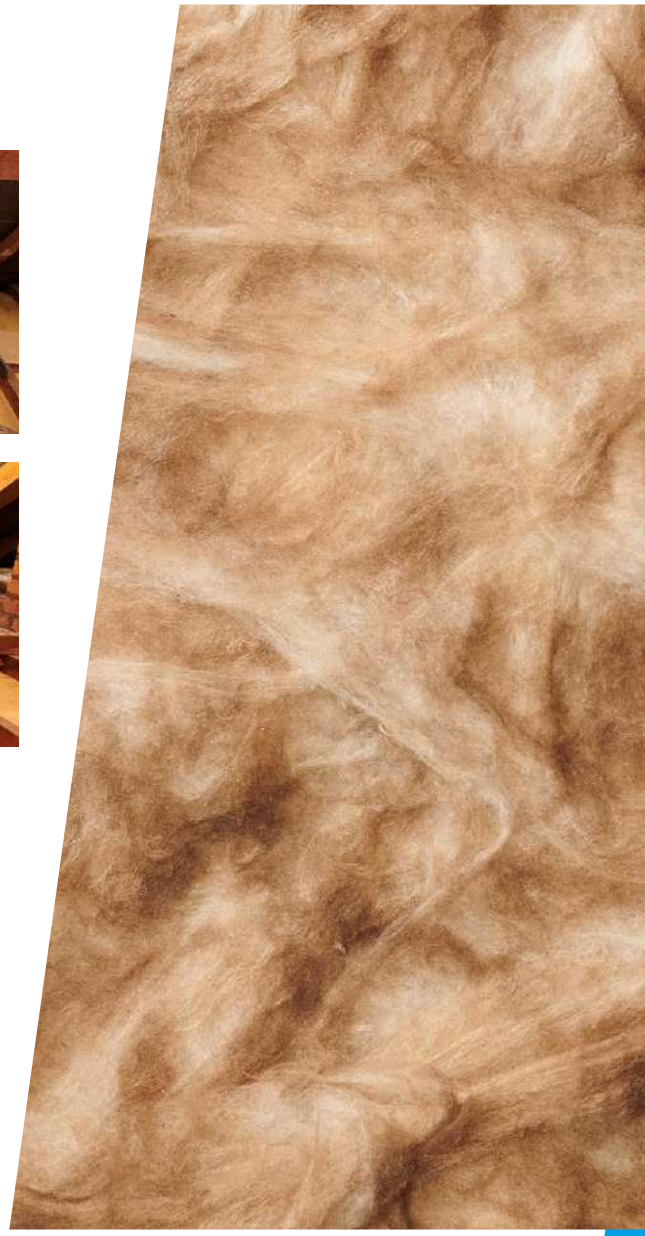
Step 3

Subsequent layers should be laid perpendicular to the first.

Begin at the eaves, cutting a notch in the insulation at each rafter so it fits snugly either side of the timber. Get the second layer as close as possible to the edge of the loft, ideally covering the joist ends at the eaves while still maintaining the 50mm air gap (use a thinner product where there isn't enough space). Work your way towards the centre of the loft.

If you are installing a third layer, this should be laid parallel to the second layer and installed at the same time.





Step 4 Insulating a loft hatch

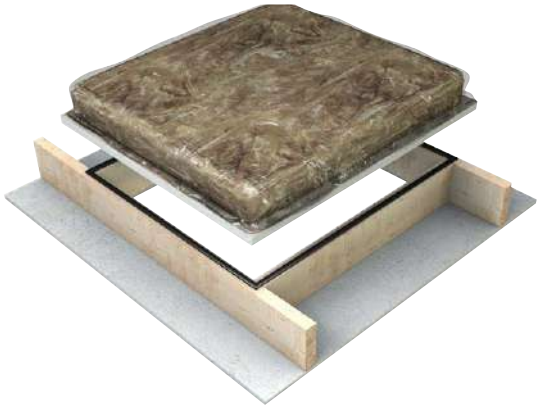
Many loft hatches are pre-insulated already. Yours may require insulation.

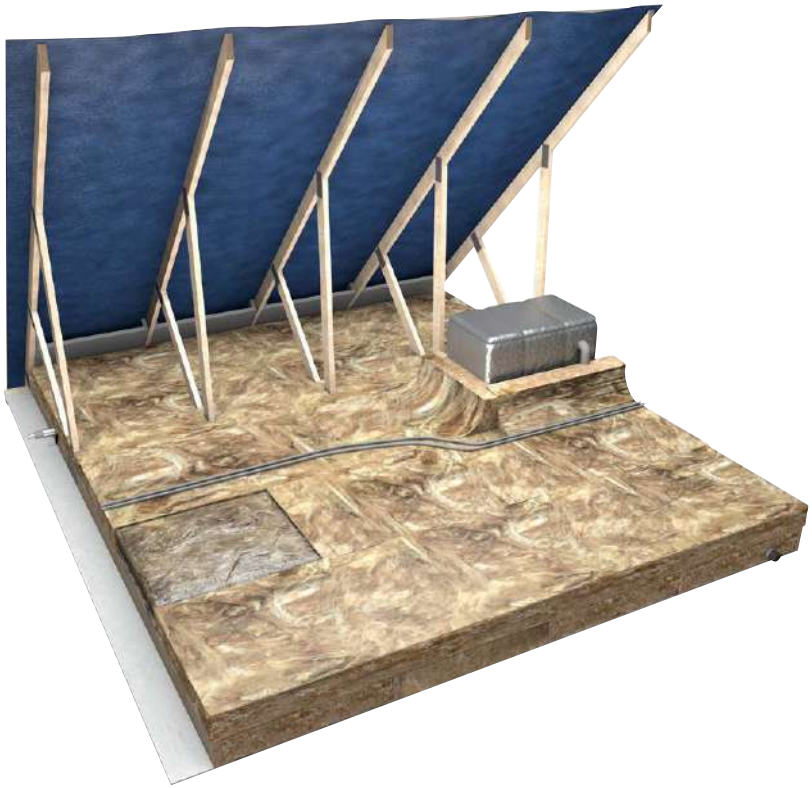
To insulate a loft hatch, cut the loft roll to the dimensions of your hatch (leaving a little extra on all sides if space permits).

Wrap the insulation in heavy duty plastic, completely enveloping the insulation while taking care not to compress it.

Staple the plastic to the loft hatch so the insulation remains in position when the hatch is lifted.

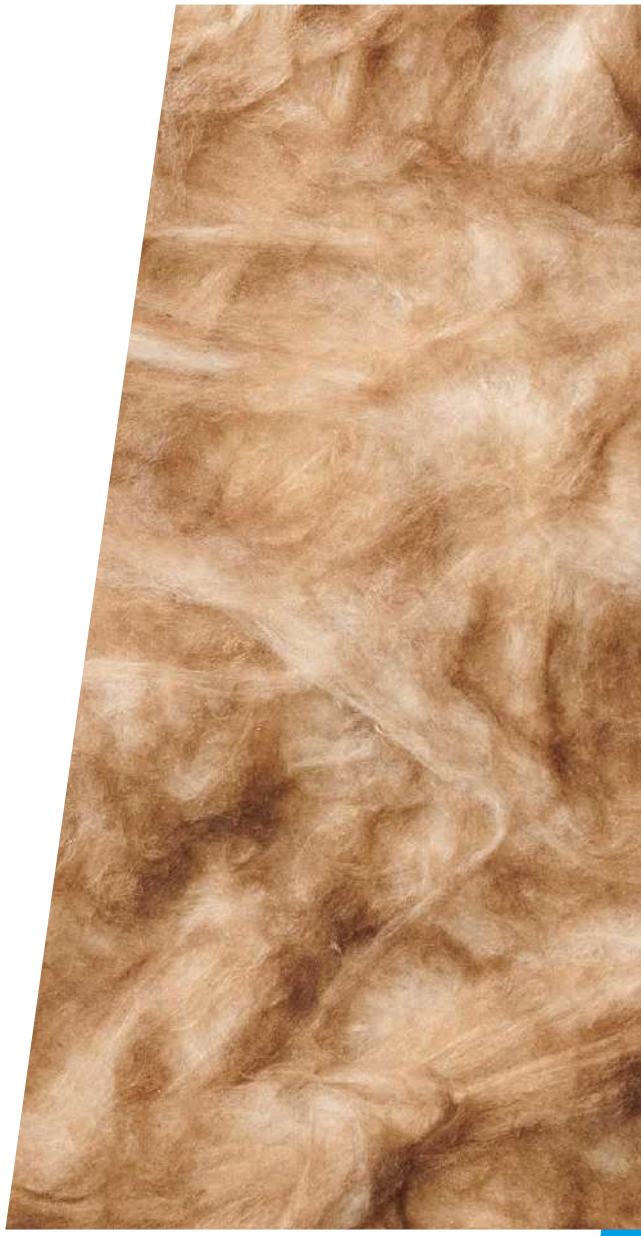
Attach draught stripping around the edge of the hatch. The weight of the insulated hatch should form a seal with the draught stripping. You can improve this seal by additionally securing the loft hatch with a bolt or hook.





YOUR FINISHED LOFT

At the end of the installation all areas of the loft should be covered in a consistent depth of insulation with all gaps filled.

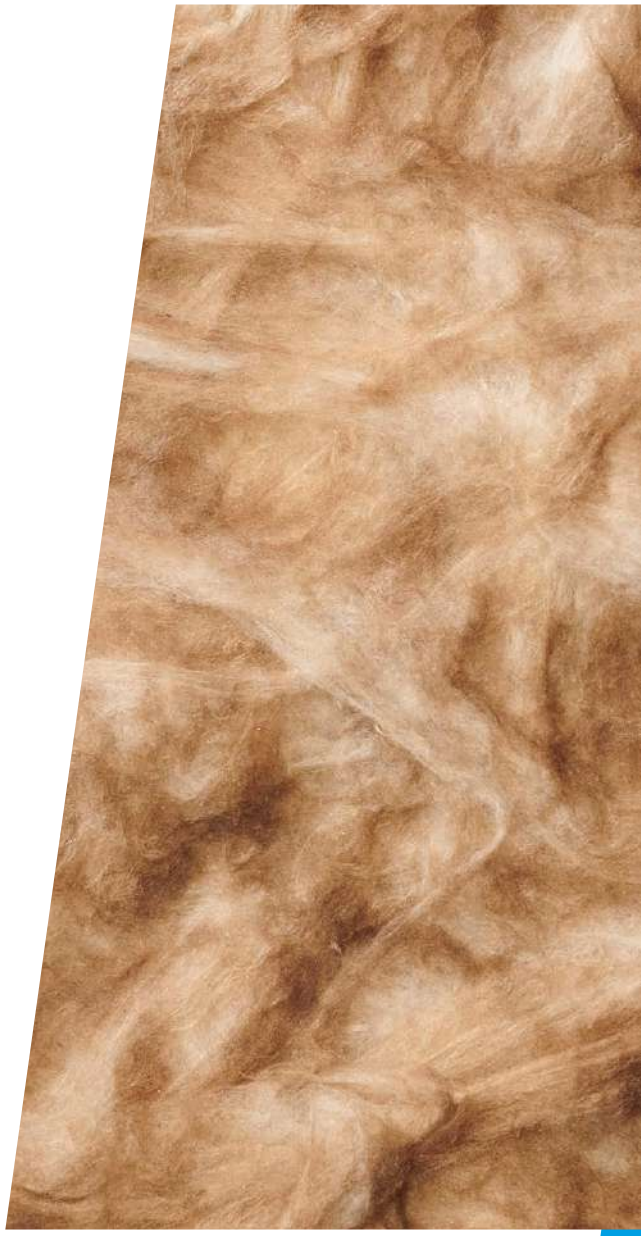


Cutting

Knauf Insulation Loft Rolls are available as Combi-cut for ease of application. Combi-cut Loft Rolls are partially perforated, providing the flexibility to be used between joists or uncut as a full-width roll, maximising on-site efficiency. If roll widths do not suit joists centres then the whole roll can be cut when in the pack using an insulation saw or sharp knife with a plain or serrated edge.

Whether you are splitting the roll along the perforation lines or cutting it to bespoke dimensions it should be done while it is still in the packaging.





VENTILATION

Where insulation is installed in cold roofs at ceiling joist level, there is a risk that condensation will form on surfaces on the cold side of the insulation in the loft space. It is possible to prevent this by:

a) restricting the passage of warm air through the structure by ensuring that the ceiling is well sealed and

b) allowing for warm air removal by either ventilating the cold side of the insulation or ensuring that the roof construction will allow water vapour to disperse and dissipate to the atmosphere.

Where a Low Resistivity (LR) underlay, which has third party certification by the British Board of Agrément is used, any water vapour that does pass through the insulation layer can disperse through the underlay to the outside air.
This is known as a 'breathing' roof and is recommended by Knauf Insulation for new dwellings.

Where a High Resistivity (HR) underlay, such as traditional bitumen based sarking felt, is used, it is necessary to provide cross ventilation to the cold side of the insulation to enable water vapour to dissipate to the atmosphere and thus prevent condensation forming.

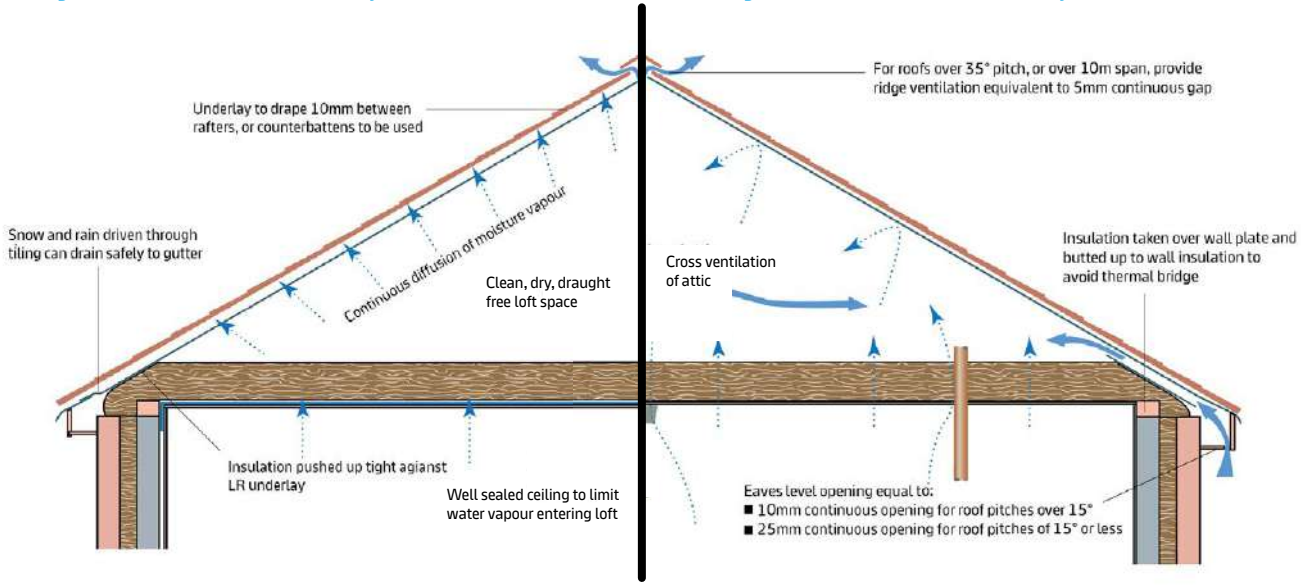
It is therefore important to take care not to obstruct the ventilation path at the eaves.

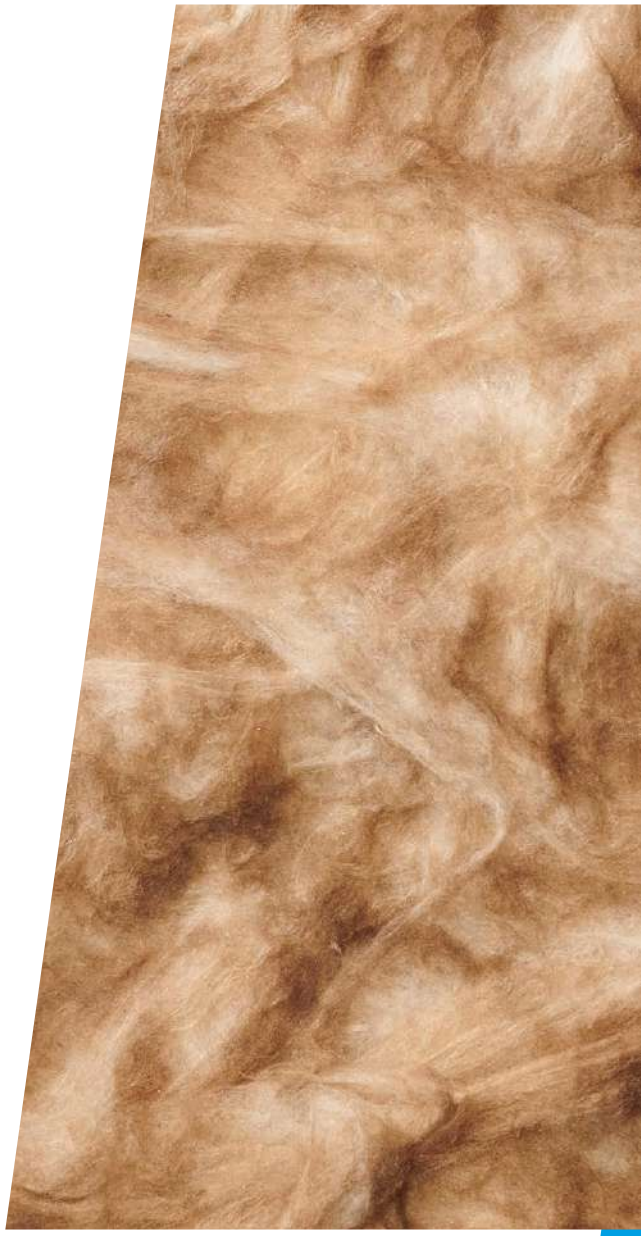
Make sure that extractor fans are connected and are venting out to the outside.

Take care to wrap Loft Roll around existing ventilation pipework/ducting.

Ceiling level insulation with LR underlay

Ceiling level insulation with HR underlay

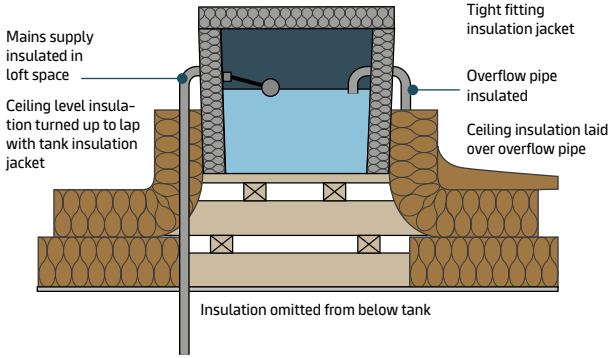




TANKS AND PIPES

Any cold water supply tank present must have a new or existing insulation jacket fitted. Leave the space directly below the tank uninsulated. The rising warm air will help prevent the tank from freezing in cold weather.

All pipes that could be affected by frost should be properly covered by appropriate pipe insulation materials.



ELECTRICAL CABLES AND FIXTURES

The latest electrical regulations and Part P of building regulations should be considered when installing loft insulation around cables.

Cables with a high load, such as a cable feeding an electric shower for example, should not be covered with insulation as this is a fire risk. Instead, lay the cable on top of your insulation. If in doubt, always consult a qualified electrician.

Heat producing fixtures should be isolated from thermal insulation to prevent fire hazards. This includes recessed lighting fixtures.
Non-combustible downlight protection covers must be installed.

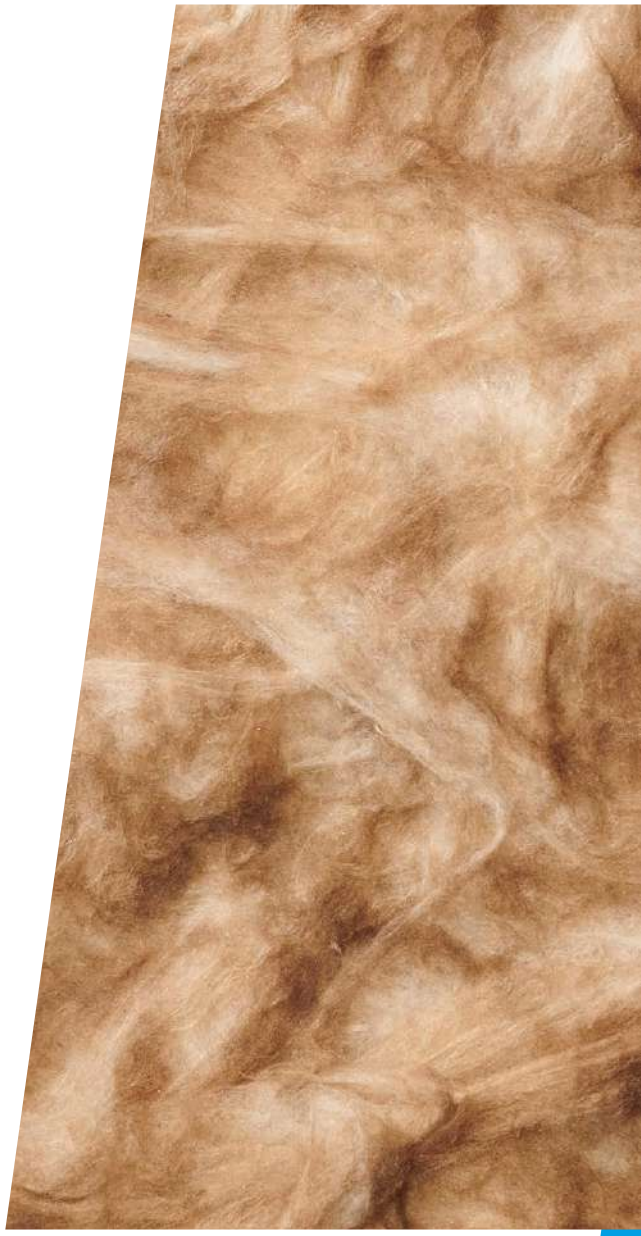


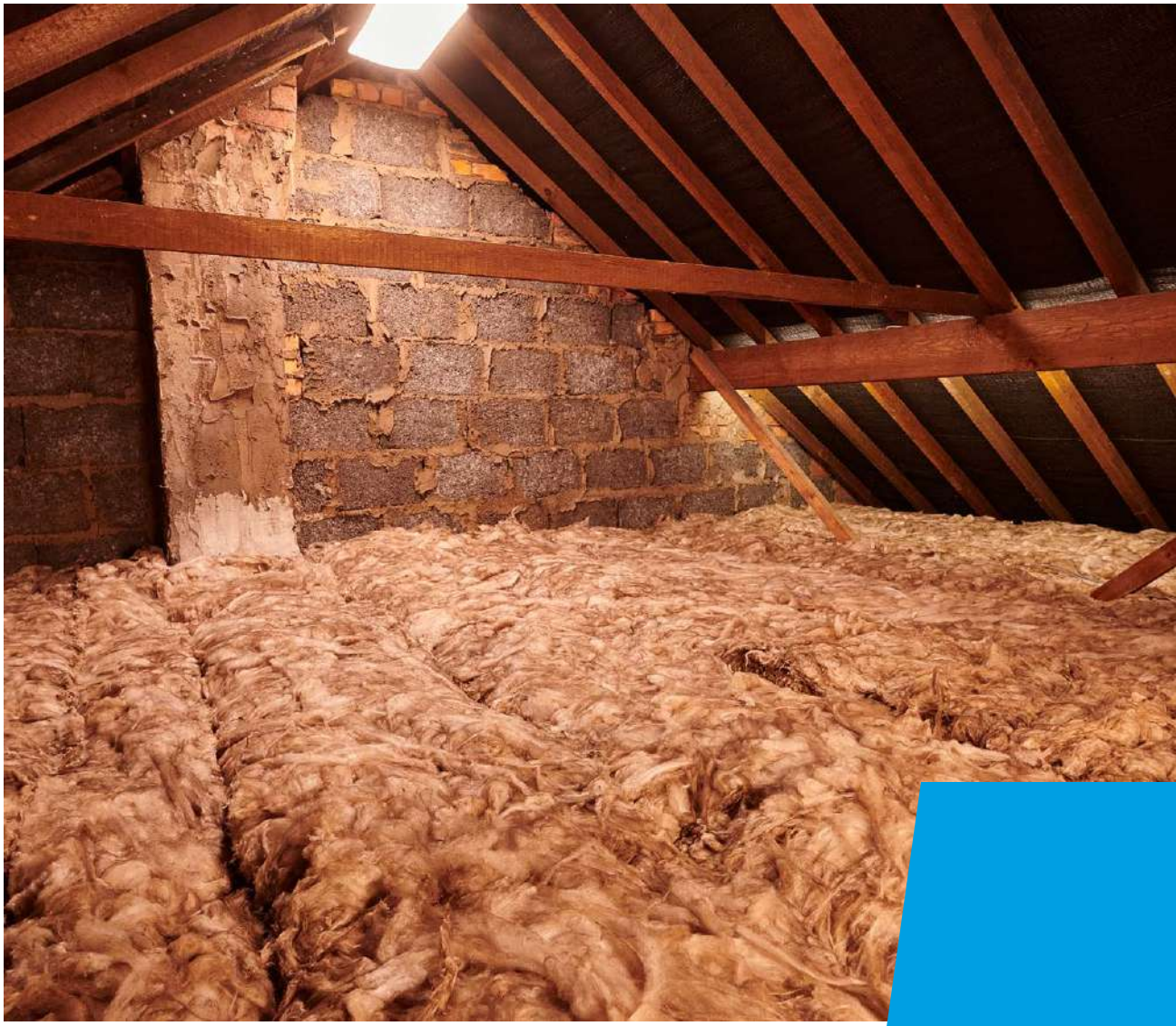
LOFT STORAGE

Any compression of insulation, once installed, will reduce its performance, and therefore should be avoided. Loft boards should be raised above the insulation by at least 50mm to allow for adequate air flow across the top of the insulation and prevent condensation from forming.

Proprietary systems are available for this purpose.







Technical Services Team

01744 766 666

technical.uk@knaufinsulation.com

For more information please visit

knauf.com

Knauf Insulation Ltd

Stafford Road, St.Helens, Merseyside, WA10 3LZ Customer Service: 01744 766 766

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