Roof insulation
What are the options?

A typical home without any insulation will lose between 20-25% of its heat through the roof. Ensuring your loft space is properly insulated is one of the most effective ways to keep the heat in, save energy and reduce your heating bills.

Most roof insulation works by trapping small pockets of air which slows down the rate of heat loss through the ceiling. Not only is loft insulation relatively cheap but you may be able to install it yourself. Once installed, it can stay effective for as long as 40 years.

What are the options?

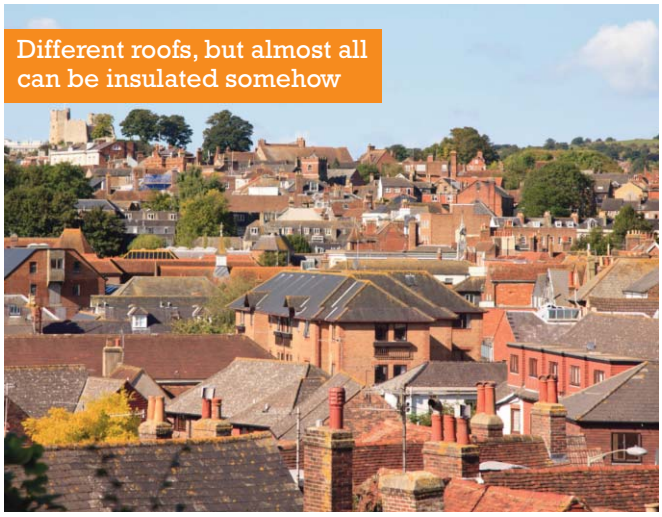
The main ways to insulate your loft are matting, loose-fill, insulation boards or blown insulation, though other forms do exist.

Matting (or **blanket insulation**) is the most common type of insulation which is composed of mineral wool. Rolls of matting can be purchased from local DIY stores and used to insulate empty lofts or top up existing loft insulation.

If your loft joists are not spaced regularly, your loft has awkward corners or obstructions, **loose-fill** material can be used. This insulation is usually made from cork granules, vermiculite, mineral wool or cellulose fibre. It is simply purchased in bags and then poured in the required areas.

Should you have limited space or if you would like to use your loft for storage, **rigid insulation boards** can also be used. Typically made of foamed plastic such as polystyrene or polyurethane they provide excellent insulation. Rigid insulation boards are available to purchase from local DIY stores. You will need to cut them to the correct size and shape.

Blown insulation is installed by a professional contractor and is either fire-resistant cellulose fibre (made from recycled newspaper) or mineral wool. It is ideal for insulating a roof space where access is limited and it can also be used to insulate stud walls as it has the ability to bond to a surface.



Different roofs, but almost all can be insulated somehow

Flat roofs

Flat roofs can also be insulated. The most effective approach is to insulate the roof from above as part of re-roofing work. If you are replacing a flat roof it is now a requirement of the Building Regulations to meet certain standards for insulation. However, if the roof does not need replacing a layer of rigid insulation board can be added on top of the roof's weatherproof layer or directly on top of the timber with a new weatherproof layer on top.

It may also be possible to insulate the flat roof from underneath but if not done correctly can result in condensation problems. Flat roof insulation should be undertaken by a professional contractor.

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How much do I need?

The recommended thickness for matting insulation is 270mm (about 10.5 inches). Other materials will achieve the same level of insulation at different thicknesses. Manufacturer's guidance will show you the thermal properties of the insulation and the required thickness. Some DIY stores also provide information about the relative performance of different products. The thermal properties of the insulation will be shown by the K-value or U-value. As a general rule, the lower these values, the better the insulation product, meaning you will require a thinner layer.

Pipework, water tank and loft hatch

While insulating your loft will keep the living areas of your home warmer it will make the air in the roof space above cooler. Therefore any pipe work and water tanks are more likely to freeze in the winter and so will also need to be insulated. Lagging your pipe work and fitting a water tank jacket is a simple DIY job - see our factsheet 'Hot water cylinder insulation'. If you do have a water tank in your loft you will need access so make sure when insulating the loft this is considered. The space directly underneath the water tank should not be insulated as heat from below will help reduce the chances of freezing.

The cooler air in your loft can potentially circulate cold draughts through the loft hatch into the main body of the house. To avoid this, insulate your loft hatch and put draught-excluding material around the edge of the frame. If matting or rigid insulation boards have been used for insulating the loft, any cut offs could be used to insulate the hatch. It is also important to make sure that the loft has adequate ventilation. Colder air is more likely to form condensation which can lead to damp problems.

Insulated loft hatch

Good ventilation through the eaves will allow moisture to escape. It may also be necessary to install extra air vents.

Tips for lower energy bills

Happy paying more for your electricity and gas than you need to? Course not. So here's how you can cut your bills:

Give your clothes a day in the sun and give your tumble drier a break. Clothes dried in the fresh air feel great, and there are drying days in winter, too.

Catch 'em young. Encourage your children to switch off electric toys and lights that they're not using. They'll soon get the hang of saving energy.

Be a friend to your freezer. Defrost it regularly to help it run more efficiently.

Buying a new washing machine, TV or dishwasher? Look out for the Energy Saving Trust logo.

Don't over-fill the kettle (but do make sure you cover the metal element at the base).

Dodge the draught! Fit draught-excluders to your front door, letter box and key hole, and draw your curtains at dusk to keep the heat in.

Turn your heating down by 1 degree. You'll hardly notice the change in temperature, but it'll make a big difference to your heating bill.

Sleep tight. Make sure all the lights are turned off when you go to bed. If you want to light a child's room or a landing, use a low-wattage night light.

The Centre for Sustainable Energy's **Home Energy Team** offers free advice on domestic energy use to householders in Bristol and Somerset (including the unitary authorities of North Somerset and Bath & North East Somerset).

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