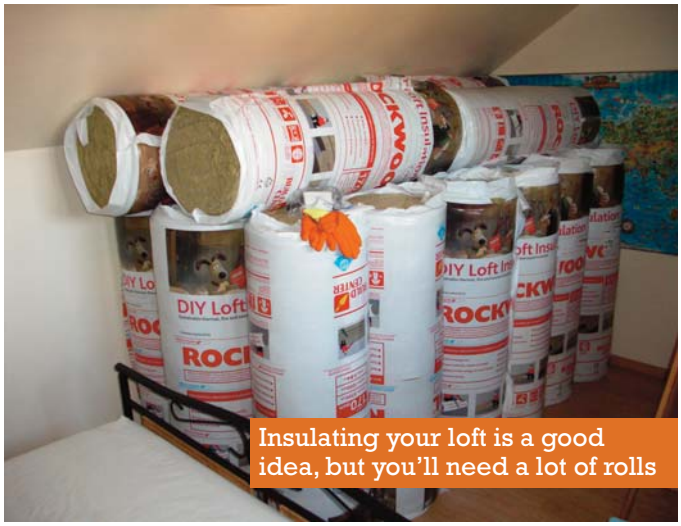
How to insulate your loft

A guide for the competent DIY-er

Around 25% of the total heat loss for a typical home is through the roof. Insulating your loft can be a simple and effective way to reduce heat loss, keeping you warmer in the winter and saving you money on your energy bills. Fitting the insulation yourself can help keep the cost down.



Insulating your loft is a good idea, but you'll need a lot of rolls

What type of insulation material should I use?

The most common form of loft insulation is mineral fibre which comes in rolls that are laid out at the floor level of the loft between the joists. Loft insulation can also be made from sheep wool, hemp fibre, flax, cellulose or recycled materials like plastic, glass or newspaper. There are other alternatives such as rigid boards, blankets (where insulation is sealed inside a foil bag) and foam panels that squeeze between joists. Some materials are better insulators than others. So you could use a thinner layer of a solid insulation board to achieve the same results as a thick layer of mineral fibre, for example.

For this guide, we'll assume that you're using standard mineral fibre insulation. If you want to compare materials, you can use the figures on the product packaging or get the figures from manufacturers. Some retailers provide leaflets comparing the relative properties of different materials. Look out for:

- **R-value** (the higher the better; a measure of how heat loss is reduced by a material)
- **k-value** (the lower the better; a measure of heat flow through a material)
- **U-value** (the lower the better; a measure of heat flow through a given thickness of a material)

Before you start

You'll need to know how many rolls to buy – most retailers and manufacturers can calculate this for you if you provide a few details. First, measure the floor area of your loft. In most properties you can do this using the length and width of the rooms beneath. If you already have some old insulation in place, measure the depth so you know how much of a top-up you need. Using mineral fibre, the recommended depth is 270mm. So if you've already got 100mm of insulation in the loft (about level with the height of the joists), you'll need rolls that are 170mm thick to bring your insulation up to standard. Also buy some draught-proofing strips for the edges of the loft hatch.

Check that your loft hatch is large enough for you to comfortably get through with a roll of insulation. If it is a very small hatch you will need to get it widened by a competent tradesperson. Be sure you have a sturdy and secure ladder to get yourself safely in and out of the loft. You will also need a couple of loose planks or loft boards to stand or kneel on once you're up in the loft space. Be very careful to only put weight on the boards so you don't damage the ceiling or yourself. Check there's enough lighting and ventilation for you to work.

Before you get going, check for any repairs that might be more difficult after the insulation is fitted and get these sorted out first. Prepare the loft space by sealing any large holes around pipes and cables, and fit coverings to any lights. Fix electrical wiring out of the way so cables don't

If you have bats in your loft: 1) lucky you; and 2) you are not allowed to harm them. More about this at the end of this leaflet.

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overheat. This is particularly important for cables supplying high electricity use appliances like electric showers and immersion heaters. These cables should lie on top of the insulation when you've finished and not be buried underneath it.

Make a plan of action – aim to start at the corners and edges and insulate towards the hatch so you have more room for the cutting and joining. If no insulation is in place already, you'll need to lay the rolls between the joists first and begin the second layer once the whole of the first layer is done.

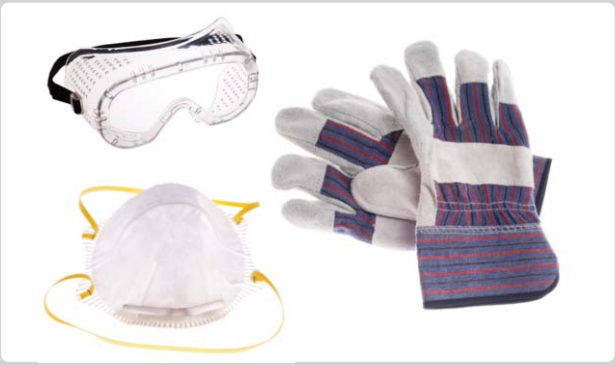
Always read the manufacturer's instructions and take extra care when cutting and unpacking the insulation. Some people find that mineral fibre irritates their skin and you certainly don't want to breathe in the fibres or get them in your eyes.

Most insulation is compression packed and will expand once the wrapping is removed, so only unpack the rolls once they're up in the loft. It's also much easier to cut the insulation while it's still rolled up. You may find that the packaging has a perforated line indicating the required width to the cut the insulation so that it fits neatly between the joists. Often the rolls will be pre-cut to the correct width before they are packaged.

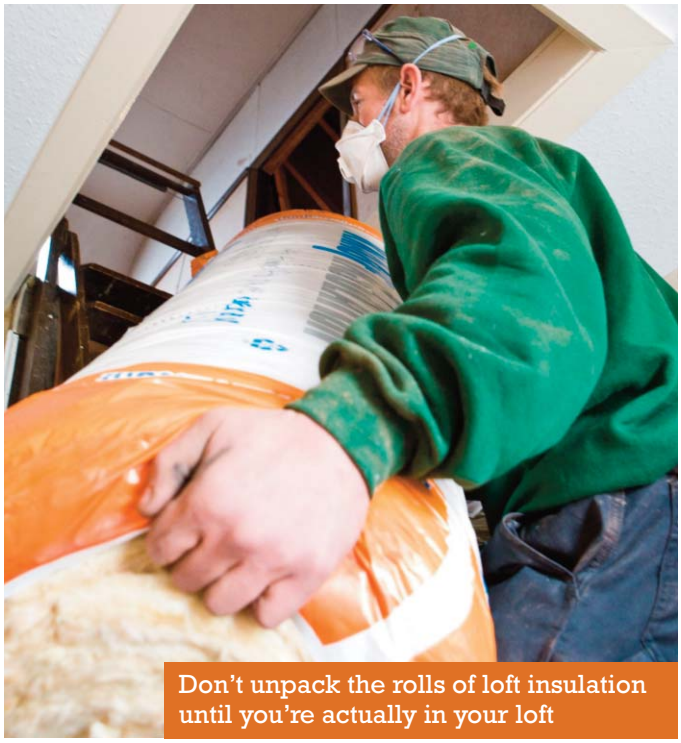
Don't squash the insulation to fit into corners, trim it so it fits properly at the right depth. Where one roll ends and another begins, push the ends together and don't leave any gaps.

Get the gear

To protect yourself, you'll need goggles, a mask that covers your mouth and nose, and gloves. Many retailers sell kits of these items.



You'll also need a tape measure, a knife to trim the rolls (a breadknife or long kitchen scissors work well) and a long-sleeved top and full-length trousers, or better still a full body overall



Don't unpack the rolls of loft insulation until you're actually in your loft

For ventilation, leave a gap of at least 25mm around the edge of the loft. Do not lay the insulation all the way up to the eaves.

Install the first layer to roughly the depth of the joists. To minimise heat loss and give an even coverage, fit the second layer across the joists at a 90 degree angle (picture, right).

Don't forget the loft hatch itself. Insulate the back of the hatch by using a square of insulation, wrapped in polythene. Fit it to the hatch using staples or tacks. Then draught-proof around the frame; fit draught-proofing strips to the edge of the hatch so it fits snugly.

Water and electrics

If you have a cold water header tank or cylinder in your loft, you need to reduce the risk of it freezing by lagging it, but do not put insulation **under** the tank. Also lag all the water pipes so they don't freeze.

If your boiler flue goes through the loft, leave a gap around this as well. It is a good idea to retain a walkway to any water tanks, boilers etc. in case they need servicing. Make sure the walkway is easily identifiable – once the insulation is in place it can be very difficult to see where the joists are, so fit walk boards if necessary.

Makes sure any electrical cables are lifted above the insulation and that recessed light fittings are not covered over.

Ventilation and condensation

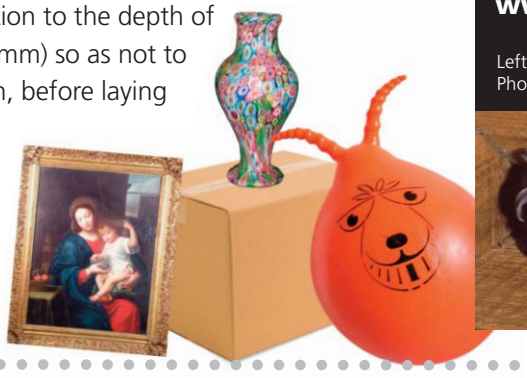
Once the loft is fully insulated, the air temperature in the loft will be considerably cooler. Because cold air cannot hold as much moisture as warm air, condensation is more likely to form. To prevent condensation creating a damp problem, it's important to make sure the loft is adequately ventilated and that air can circulate. Be careful not to cover air vents, and make sure that the insulation is not pressed up around the outside walls or eaves.

Check the loft from time to time to spot any condensation problems. You may find additional ventilation is required. If you are concerned about condensation making items stored in the loft damp, consider using plastic boxes with fitted lids.

What if I want to use my loft for storage?

If you need to use the whole of your loft space for storage then topping the insulation up to 270mm may not be practical. Mineral fibre insulation works by trapping tiny pockets of air, so if you squash the insulation down underneath loft boards it will reduce its efficiency. You can raise the height of the joist to allow for 270mm of uncompressed insulation using brackets and placing boards on top. This will add an extra cost to the job, may not be suitable to do yourself, and will reduce height of the loft space making it more difficult to move around.

Think about what you would like to store and whether frequent access is required. If it's just a few boxes, you can insulate the majority of the loft to the full depth and have a small boarded area adjacent to the hatch. For this boarded section, only lay insulation to the depth of the joists (typically 100mm) so as not to compress the insulation, before laying the boards on top. You could also consider using rigid insulation boards rather than mineral fibre.



Costs & savings

Annual saving on energy bills

Installing the full 270mm	£175
Topping up from 50mm to 270mm	£45
Topping up from 100mm to 270mm	£25

These are typical figures based on a 3-bedroom semi-detached house using gas central heating and assuming mineral fibre has been used. For properties using a different heating fuel like oil or electricity, the savings on bills are likely to be considerably greater. For mineral fibre expect to spend anywhere between £100 and £350. Other materials may cost more. A typical payback period would be between 2-8 years for DIY loft insulation depending on these factors.

Bats in the loft?

Bats are protected by law. You may be committing a criminal offence if you capture, injure or kill a bat. It is even an offence to disturb a roost or obstruct the bats' access to their roost.

So if you have bats in your loft, it is strongly recommended that you contact the Bat Conservation Trust (www.bats.org.uk) before you begin work (**enquiries@bats.org.uk** or **0845 1300 228**). The Trust is contracted to Natural England to provide free advice.

If you're in Wales, contact Natural Resources Wales on **0300 065 3000** or via the website at **www.naturalresourceswales.gov.uk**

Left, long eared bats; right, lesser horseshoe bats.
Photos: John Black / Bat Conservation Trust

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Our **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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