IS YOUR INSULATION A GOOD FIT?

You probably think that installing insulation with the correct R-value means you've complied with Building Code Clause H1 *Energy efficiency*. However, if it's been installed incorrectly, you may have to think again.

By Alan Bulleyment, FNZIA, Contract Technical Writer, Porirua City

Poor fitting of insulation can result in the loss of a considerable proportion of its designed R-value. Some insulation is so poorly fitted that it would be lucky to achieve half its designed R-value. So, if the insulation material is specified to just meet the requirements of the Building Code and no more, the insulation value of the wall no longer meets the Code's requirements. In such cases, the Building Consent Authority could insist on it being taken out and fitted correctly before wall lining begins.

How heat is lost

The efficiency of thermal insulation can be compromised by:

- failure to fill all the accessible spaces between the timber blocking with insulation (e.g. external corners)
- gaps between insulation and framing due to inaccurate cutting and/or fitting
- gaps where sections of insulation are not fitted together tightly (particularly a problem when using rigid insulation)
- compressed, folded or sagging insulation
- failure to fit insulation correctly around service pipes and wires.

Responsibility to get it right

The building industry has a responsibility to make sure that building owners get what they've paid for, by ensuring the design is met so that users can enjoy the benefits.

Architects' specifications should cover the appropriate insulation, its correct installation and the standard of the work. Thus, the completed construction will meet both their clients' expectations and the requirements of the Code. Where higher levels of insulation are specified to reduce energy input, it is important that the design R-value is achieved on site.

Builders must ensure that insulation fitters are familiar with the detailed requirements and have sufficient skill and time and the correct equipment. It's not a difficult job, and doing it correctly costs no more than making a botch of it. Having to redo it could be a lot more expensive.

Use the correct equipment

Safety equipment will vary with the type of material used but may include gloves, overalls, a dust mask and clear goggles for eye protection.

Tools will also vary with the material but may include:

- a box-type cutter with a long blade (for most materials)
- a special rotary cutter (may be an advantage for wool products)
- tape measure
- scissors
- stapler
- hand brush
- sufficient lighting to allow accurate installation
- ladders or steps.

Set the standard

Make sure that the person fitting the insulation has the time and know-how to do the job correctly. If necessary, have some sample panels done to set the standard.

Programme the work

As the exterior wall underlay is being put on, fit insulation in the spaces between framework

Press the material into place without creasing, folding or compressing it.

that can only be accessed externally, such as the gap between external studs at corners. Fitting the wall underlay immediately will ensure that the insulation doesn't get wet or blown away.

When the building is completely weather-tight and the framing has reached the specified moisture content, install the

insulation internally. This should be immediately before the internal linings are applied.

Installation process

Store insulation in a dry place with the bales stacked on end to avoid undue compression.

Before installation begins, clean away all wood shavings and sawdust. Release the insulation material from its packaging to allow it to expand for about 15 minutes. Wool insulation can be shaken to assist recovery.

Cut glass wool, polyester and wool material approximately 5–20 mm larger than the space in both directions. Press the material into place without creasing, folding or compressing it. It should be in contact with the wall underlay but, where there is a cavity, the wrap must *not* be pushed into the cavity space.

Where make-up pieces are needed, it is better to fit them above the larger piece and make sure there are no gaps between segments. Make sure the insulation fits tightly around electrical boxes.

Where necessary, secure insulation in place using a vertical PVC strapping between studs stapled to the horizontal frames. Wool insulation panels can be held in place by fixing to the horizontal framing with three staples at the top.

Do not distort or compress the material to fit it around service wires and pipes. To avoid compression, slit the material part way through on the line of the wire or pipe and insert it so that the service fits into the slit and arrange the material around it. Alternatively, cut separate pieces to fit tightly on either side of the service (see Figure 1).

On completion, sweep up and remove all insulation offcuts.

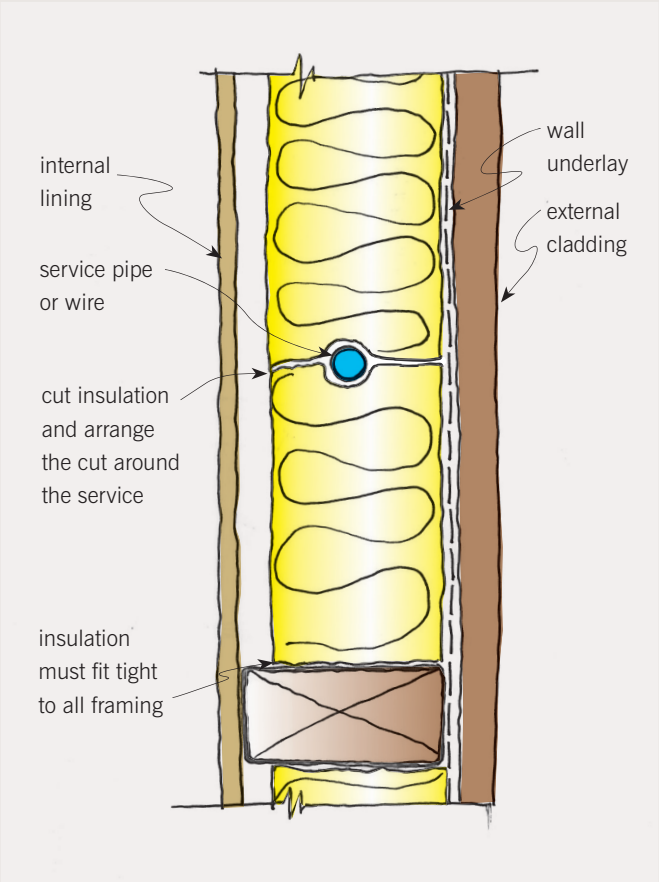

Figure 1: Cutting and installing insulation around a service pipe or wire.