

# SUPERIOR THERMAL PERFORMANCE



## A timber framed home is warmer

Wood has been shown to be 400 times better than steel in keeping heat in and cold out.

To make up for this, a steel framed house has to have an additional thermal break such as polystyrene or plywood between the framing and the cladding.

Even when this is done, the home may only meet the minimum building code requirements for insulation performance.

Research has shown that throughout the South Island, a steel-framed home with a polystyrene or plywood thermal break will not meet the building code standards, and additional insulation will be required, increasing costs and build time. (Source: Green Being)

Timber framed homes will exceed building code requirements anywhere in New Zealand without the need for an additional thermal break.

## Condensation and “ghost marks”

Steel transfers heat and cold more readily than wood, which can lead to condensation forming on internal or external linings, particularly when thermal breaks are inadequate or incorrectly installed. Ultimately, this may lead to mould forming on the wall or ceiling linings. In some cases, this leads to the appearance of “ghost marks” (shadow-like outlines of the framing) on the interior walls.

While “ghost marks” are unsightly, internal condensation and mould can have more serious consequences and may adversely affect the environment of the home and the health of its occupants.

## Heat loss through ceilings?

Most “lost heat” in a home escapes through the roof and walls.

*A timber frame home is naturally warmer, whereas a steel framed home requires thermal breaks and additional insulation to prevent heat loss and condensation.*

While the National Association of Steel Framed Housing (NASH) recommends a thermal break for walls constructed with steel framing, there is no recommendation for a thermal break in ceilings where steel framing is used.

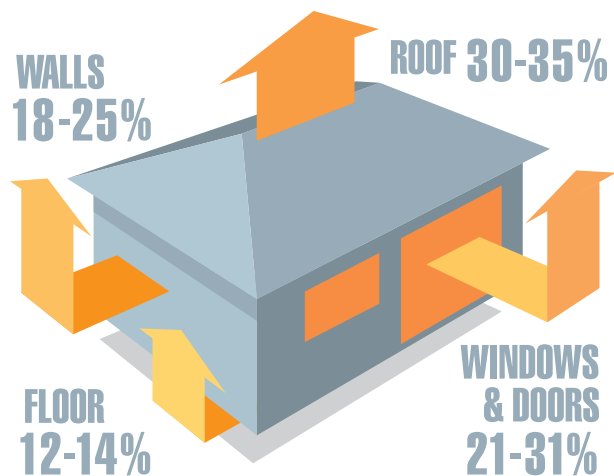
However, given that the greatest heat loss in homes is through the ceiling, it is likely that a steel framed ceiling and roof

space will also require a thermal break to minimise condensation and ghost marks. Code Compliance may even be compromised without the use of thermal breaks in these areas.

If you are considering building with steel framing, it is important that you thoroughly investigate what extra measures you will need to put in place to ensure the home is insulated to a performance level equal to a home constructed with timber framing.

Because steel framing is known to be a high conductor of heat and cold, building authorities and inspectors may be extra vigilant and require on-site testing to ensure the insulation values comply with the NZBC.

## Where a house loses heat.



“Insulation is only effective if it achieves unbroken coverage around the building. If there are any breaks in the insulating material, heat can escape. A common example is steel wall framing which interrupts the insulation and acts as a thermal bridge. Heat loss along thermal bridges can be minimised by using thermal breaks. Material that does not conduct heat, for example polystyrene, is placed between the steel framework and the outside building material. This is something your designer should know about. Compliance with the Building Code requires thermal breaks to be used when steel studs are used in wall construction.” – Consumerbuild.org.nz