



# ZOG STEEL FRAMING SPECIFICATIONS







# WHY STEEL?

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**Sometimes the best part of a new home is something you don't even see - like the ZOG® steel framing that holds your house together.**

**Steel framing has been used for decades in the commercial industry, but it's a relatively recent development in New Zealand home building. Frankly, it's the best thing since double glazing.**

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## EARTHQUAKES

ZOG steel frames exceed expectations in earthquakes. Tested independently in Australia, the steel frame and bricks successfully exceeded 9 on the Richter scale. ZOG's patented bottom plate anchors were 100% successful in the recent Christchurch earthquakes. This is of course a significant advantage in New Zealand where many cities are situated on or very near to known fault lines.

"The test house performed right at the upper end of my expectations and it's as good as we could have hoped for and certainly better than I expected. This means that we have a system that is incredibly robust in earthquakes and it means that we can show that the system will deliver the best possible performance in an earthquake and performance that I believe is demonstrably better than any other system that's been tested in New Zealand to date."

- Dr G Charles Clifton, University of Auckland, NZ.

## ELECTRICAL SAFETY

ZOG steel frames are permanently earthed in accordance with the requirements of the local electrical authorities. Steel is an excellent conductor of electricity it is improbable that any current would actually pass through the human body (high resistance) instead of the frame to earth system (low resistance). Non-conducting building materials with higher electrical resistances than steel actually increase the chance that more current will pass through the person.

It is a requirement that any new dwelling must be fitted with a safety switch, also known as an RCD (Residual Current Device) or an ELCN (Earth Leakage Circuit Breaker). These devices are designed to prevent death by accidental electrocution in a majority of cases.











## FIRE SAFETY

No home can be completely fire safe but there are a number of ways you can plan for a house that has high fire-resistance. Your choice of building materials is very important. Sometimes life depends on it. The right materials can significantly delay, minimise or prevent damage to your home. Should damage occur, the materials of construction could mean the difference between repairing your home or having to rebuild it completely. Put simply: FIRE CANNOT SPREAD WITHOUT FUEL.

ZOG steel frames do not ignite, propagate or add fuel to a fire. Golden Homes utilise premium 10mm Ultraline® on ceilings and 10mm Ultraline on walls throughout their homes as a standard specification. Ultraline has similar fire resistance characteristics to Fyrelime®. Substituting combustible materials, such as Ultraline, will assist in reducing the consequences of uncontrolled fire. The frames and trusses will not burn and are electrically safe, largely reducing the flammable materials in your home. ZOG steel is engineered to be used for our roof battens, along with fire retardant roofing paper. When fire resistance is a critical consideration in construction, ZOG steel framing provides a great solution.

## HEALTHY

ZOG steel frames are chemical-free, allergen free and dust-free and have been approved by Sensitive Choice New Zealand, for providing a potential benefit to those with asthma and allergies. Specifically developed sealing techniques for around windows, plus a moisture barrier system are combined with ZOG steel frames to help achieve this. This stability of the dimensions & shape of ZOG steel framing is a major factor in being able to maintain effective long-term sealing reducing the ingress of dust and moisture.

ZOG steel doesn't support mould growth or rot and its stability gives it the potential to reduce cracks in claddings and linings. ZOG steel does not contain additional preservative chemicals and won't give off gases or emit violent and/or obnoxious chemicals (VOCs).

## CLIMATE/ENVIRONMENT

Golden Homes have pioneered double glazing, introducing it as a standard feature in 2003. Today, we are again leading the building industry with thermally improved aluminium frames becoming a standard feature in our homes. This compliments the overall thermal performance and comfort level of the entire home. Our Golden specification insulation is R5.0 in ceilings and R2.5 in walls.

Construction of any building material has some impact on the environment. Effects can occur in production, transport, distribution, the building process, service and disposal.

Consumers are urged to consider the wider picture. They will be bombarded by isolated "facts" given out of context to create a favourable image. For example, the planting of trees is promoted as a wholly good thing: "young growing trees use carbon dioxide from the atmosphere". The loss of habitat, the use of pesticides and herbicides, the downstream effects of the planting of introduced species of trees on large tracts of land, large factories producing treatment chemicals, heavy machinery for clearing, milling, drying and much more, are conveniently ignored.

Independent bodies (and some steel producers) around the world have performed life-cycle analyses on the environmental impacts of using steel.

- ZOG steel frames are 100% recyclable and approximately 55% of all steel in use has been produced from recycled scrap. Steel recycling programs reduce the solid waste stream, resulting in saved landfill space and the conservation of natural resources.
- ZOG steel framed homes are energy-efficient homes that are not only "liveable", but minimise total energy consumed in heating and cooling over its lifetime due to the highly efficient insulation. This saves the homeowner money and just as importantly, lessens the impact on the environment.
- ZOG steel frames are lightweight but strong. They are made from 0.75mm BMT, high tensile steel and have been engineered to achieve a very high efficiency of material use.
- ZOG steel frames are fabricated from components made specifically for each individual home, thus minimising wastage due to scrap. Scrap wastage on the actual building site is also minimal because very



## CONSTRUCTION

ZOG steel is manufactured in New Zealand from locally mined iron-sand and a component of recycled steel. The roll forming technology behind steel framing allows fabrication to exact specifications before they're erected.

About 60% of NZ Steel output is exported. NZ Steel operates to the stringent ISO 9000 quality standards and is committed to being a world-class steelmaker.

During periods of wet weather or during winter months, the moisture level in timber frames can become too high and so internal wall linings cannot be commenced until the moisture levels drop sufficiently. ZOG steel frames do not suffer from the inconvenience so construction times are often significantly reduced.

As ZOG steel frames are so dimensionally straight, trades people find there is no need for packing to compensate for non-linear dimensions as is often the case with timber framing. Internal lining trade's people prefer ZOG steel framing because of its straightness and accuracy. Specialist sub-contractors can install bathrooms and kitchens more easily and at a lower cost for the same reasons.

The dimensionally stable properties of ZOG steel framing assists in providing a very high standard of internal finish that will last as ZOG steel framing will not warp, twist or shrink after installation.

## CONDENSATION

ZOG steel framed homes are dry.

When looking at past occurrences on an individual basis, they have invariably been a direct result of high moisture levels in the house combined with a lack of insulation and suitable ventilation. Causes for this high moisture have been showers, cooking, dryers, unvented gas heaters, drying clothes indoors and other activities that create moisture.

The most simply realised measurement of humidity (amount of water vapour in the air) is the temperature at which water vapour first condenses. This temperature is known as the "dew-point". The engineered ZOG steel frame system has an Home-RAB thermal break and hence remains above dew-point. Timber does not have a thermal break and may often fall below its dew-point. Without a thermal break, timber frames will condensate at higher temperatures, any moisture on timber can start deterioration that can continue even after it dries. When any moisture on steel dries, the steel will not rust.

## KEEPING UP APPEARANCES

A ZOG steel frame home will not twist, shrink or warp, significantly reducing the chance of unsightly plaster cracking, saggy ceilings, bowed walls and jamming doors or windows.

Steel is a stable material with consistent chemical attributes. Once the steel stud has been formed, it will remain straight with virtually no change to thickness, width or other dimensional properties.

## DURABILITY

Steel framing is the only framing material for which any kind of structural durability warranty is offered. ZOG steel frames come with a 50 year durability warranty from New Zealand Steel.

Warranties for ZOG steel frames cover thermal areas such as Rotorua and coastal areas (sea-spray) such as Kapiti Coast.

ZOG represents the leading edge in framing for homes in New Zealand and delivers to the home owner all the additional benefits of strength, structural integrity, durability and rigidity at a comparable, often more competitive price to traditional timber.

Steel framing is more likely to maintain its structural integrity over the long-term because it is impervious to rot, termites and other pests that can slowly degrade the structural integrity of framing members, lessening the ability of a house to withstand seismic forces.







