

Requirements for Pre-Manufactured Buildings

The New Zealand and Australian Building Codes require all building work to comply with the relevant 'Building Code' (or National Construction Code – as it is called in Australia)

This means that where an importer wishes to have a building that has already been pre-manufactured, (say in china), then the importer must show how each key part of the building will comply. In some cases, there is a relevant New Zealand and or Australian Standard that the part will need to comply with. In other cases, deciding whether a part of the building or house complies, will need to be decided on a case by case basis by a building product assessment body.

One way of showing how a part or all of a building complies with the relevant Building code, is to use designs and materials that have been already approved by the Government. These designs are called "**Acceptable Solutions**". These can be obtained by downloading the relevant document from the internet. Guidance from suitably experienced building expert, such as BEAL (www.beal.co.nz), is advised.

A starting point, is to read through the **Building Code handbook** which is available from <https://www.building.govt.nz/assets/Uploads/building-code-compliance/handbooks/building-code-handbook/building-code-handbook-3rd-edition-amendment-13.pdf>

This paper now examines the requirements, part by part of a building –

1. The roof and gutter system

The roof needs to –

- a) keep wind-driven rain out of the building (i.e it must provide weathertightness)
- b) remain durable for the stated life of the product (at least 15 years)
- c) be safe to walk on for occasional maintenance (i.e the supporting structure must allow for the weight of tradespersons and the like from time to time)

There are numerous types of roof systems. The common ones used in New Zealand are –

- a) Corrugated pre-painted steel
- b) Pre-painted roof tiles
- c) Shingles
- d) Masonry roof tiles
- e) uPVC gutter and downpipe systems

Each type must meet the performance requirement described in in the relevant Code Of practice document or Acceptable solution document, or where none exists,

assessed for compliance by a building product assessment body, such as BEAL (www.beal.co.nz).

The metal roof Code of Practice can be down-loaded from <https://www.metalroofing.org.nz/codeonline>

2. The exterior wall / cladding system

The wall or cladding needs to –

- a) keep wind-driven rain out of the building (it must provide weathertightness)
- b) remain durable for the stated life of the product (at least 15 years)
- c) be resistant to occasional strong gusts of wind (depending on the “wind zone” where the building is situated)
- d) be easy to maintain and repair

There are countless types of wall or cladding systems. The common ones used in New Zealand are –

- a) Painted timber weatherboards, installed either horizontally or vertically
- b) Brick walls
- c) Fibre-cement sheet walls with textured finish
- d) Plaster finish over concrete or Expanded polystyrene or Fibre-cement sheet

Many new wall and cladding systems are being introduced, such as insulated weatherboards.

As with roof systems, each type of wall or cladding system must meet the performance requirement described in the relevant Code Of practice document, or Acceptable solution document, or where none exists, assessed for compliance by a building product assessment body, such as BEAL (www.beal.co.nz).

3. The structural wall / framing system

The structural wall or framing system needs to –

- a) remain durable for the stated life of the product (at least 50 years)
- b) be resistant to occasional strong gusts of wind (depending on the “wind zone” where the building is situated)
- c) be able to cope with occasional earthquakes
- d) be designed to carry the expected loads from the roof or the floor and roof above

There are numerous types of wall or framing systems. The common ones used in New Zealand are –

- a) Timber framing that complies with the requirements of **NZS3604**
- b) Formed, light gauge steel framing that complies with the Guidelines set out in NZ **NASH Standards 1 and 2**.

Each type must meet the performance requirement described in the relevant Standard or Code of Practice document. Help with deciding compliance can be obtained from a building product assessment body, such as BEAL (www.beal.co.nz).

4. Windows and Doors

Windows and doors need to –

- a) remain durable for the stated life of the product (at least 15 years)
- b) be resistant to the passage of air as set out in the NZ Standard NZS4211
- c) occasional strong gusts of wind (depending on the “wind zone” where the building is situated)
- d) be able to cope with regular opening and closing forces

There are numerous types of window and door systems. The common ones used in New Zealand are –

- a) Pre-painted aluminium windows and doors compliant with NZ4211 and the durability requirements of the New Zealand Building Code
- b) uPVC windows and doors compliant with a European Standard

Each type must meet the performance requirement described in in the relevant Standard. Help with deciding compliance can be obtained from a building product assessment body, such as BEAL (www.beal.co.nz).

5. Wet Area Wall and Floor Linings

Wet area wall and floor linings need to –

- a) remain durable for the stated life of the product (at least 15 years)
- b) be resistant to the occasional splashing of water
- c) be able to cope with regular cleaning using various cleaning agents as set out in the Standard NZS4858

There are numerous types of Wet area wall and floor lining systems. The common ones used in New Zealand are –

- a) Pre-finished laminate sheets
- b) Waterproof membrane systems with ceramic tiles applied over them. The membranes are expected to comply with NZ Standard NZS4858.

6. Fire requirements of materials

In New Zealand, there are no fire performance requirements for building materials used in houses.

7. Plumbing, Electrical and other Services

Plumbing, Electrical and services need to –

- a) remain durable for the stated life of the product (at least 15 years)
- b) be compliant with the relevant Acceptable solution or, Code of Practice, if relevant.

The compliance requirements of Plumbing, Electrical and Services in general, are mostly described in an Acceptable solution document. Help with deciding compliance can be obtained from a building product assessment body, such as BEAL (www.beal.co.nz).

All building products, materials and systems, must meet each of the relevant “performance requirement” as described in the New Zealand “Building Code”.

Below is a summary of these requirements with helpful information:

1. **In relation to clause B1 - structure**, where steel has been used for structural use, it will be necessary to show that standard grades of steel have been used in the construction. Test or mill certificates are usually supplied. Where other materials have been used for the construction of the floor, walls and roof, then evidence, usually from a suitably qualified engineer, that demonstrates compliance with the relevant performance clauses of the New Zealand Building Code, will be required.

2. **In relation to clause B2 - durability**, it will be necessary to show that the exterior cladding is adequately protected from the effects of the weather. You will need to show what quality of paint and quality control of the application is in place. Ideally the manufacturer will be able to show the QA covering paint application in their Manufacturing quality plan, which they will need to develop.

3. **In relation to clause E2 - weathertightness**, the manufacturer will need to demonstrate how the exterior roof, walls, windows and doors and penetrations meet the New Zealand weathertightness standards of performance. It may be more practical to conduct such assessment in the country of manufacture, or be necessary to conduct testing here in New Zealand. As there is no standard methodology for assessment of a container type building, so we will need to develop such a method and get the building industry to agree to it.

4. **In relation to clause E3 - interior moisture**, it will be necessary to consider how excess moisture is removed from wet areas where steam and the like can be generated. Then someone will need to assess the efficiency of such and maybe do some measurements. Again, there is no standard assessment method which will need to be developed and approved. Impervious and easily cleaned surfaces are required in wet areas and interior linings are required to be protected from water splash where applicable.

5. **In relation to clause F2 - hazardous materials**, it is unlikely any materials are likely to be an issue. A careful review of the materials will need to be carried out.

6. **In relation to H1 - energy efficiency**, you will need to supply us with a report from a suitably qualified person showing how compliance is being achieved.

7. **In relation to the clauses starting with G...** covering services etc, you will need to show that the materials are durable and that fittings such as taps and the like meet the Australian Watermark scheme or similar. Key areas of concern will be supply of fresh water, removal of foul water, supply of fresh air etc... See below.

Key requirements for buildings include -

G1 – Sanitary Fixtures

- G2 – Laundry Facilities
- G3 – Food Preparation Facilities
- G4 – Adequate Ventilation
- G5 – Adequate Interior Heating
- G7 – Adequate Natural Lighting
- G8 – Adequate Artificial Lighting
- G9 – Safe Electrical Installations
- G10 – Safe Piped services
- G11 – Safe Gas installations (if used)
- G12 – Safe Water Supply Fixtures
- G13 – Adequate Removal of Foul water
- G15 – Adequate means of storing Solid Waste (if applicable).

Notes:

- The Building Act 2004 assumes an indefinite life of at least 50 years unless a lesser period is nominated under s113 of the Act.
- E2 is generally concerned with damage to the building elements and undue dampness to occupants.
- BEAL can recommend people to help you with testing, or measuring or calculating these requirements.