

# TIMBER TREATMENT HAS JUST GOT SIMPLER

The treated timber framing system that came into effect on 4 April this year allows a single hazard class, H1.2, to be used for all enclosed radiata pine and Douglas fir framing.

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Changes to the system for treated timber framing are contained in Building Code Acceptable Solution B2/AS1. The previous system required up to four 'minimum levels of treatment', including untreated, H1.1, H1.2 and H3.1, depending on where in the building the timber was to be used. In addition, there were some timber uses and locations that were either unclear or omitted, and this caused ongoing confusion within the industry.

## One exception to H1.2 for framing

Most users of timber can now buy H1.2 framing and use it anywhere enclosed in a building for frames, trusses, floor joists, flat and sloping roofs, skillion roofs and so on. There is, however, one exception – cantilevered deck joists and associated framing must be H3.2 (see Figure 1). All other deck framing and enclosed balustrade and parapet framing can be H1.2 treated.

These changes follow 3 years of work with the sector, completion of research projects and consultation and evaluation by the Department of Building and Housing.

No change to NZS 3640 or 3602 yet. For the more regulatory minded, these changes are modifications to the referenced standards in Acceptable Solution B2/AS1 for timber – NZS 3640:2003 *Chemical preservation of round and sawn timber* and NZS 3602:2003 *Timber and wood-based products for use in building*. The standards themselves have not been amended. B2/AS1 simply modifies the requirements of the referenced standards in the Acceptable Solutions for durability of timber.

The standards will be updated in due course, but in the meantime, users and specifiers will need to work with both the New Zealand standards and the Acceptable Solution B2/AS1 for all treated timber information (see Table 1).

## A few special provisions

The changes relate only to radiata pine and Douglas fir framing timber that is enclosed by cladding. This includes all roof and wall framing plus intermediate and ground floor framing, provided it is not in ground contact and is protected from the weather. All this framing and

many of the secondary elements, such as valley boards and ceiling battens, can be H1.2 treated (except cantilevered decks). The following are special provisions included in the changes.

### UNTREATED DOUGLAS FIR FRAMING

Because Douglas fir has been shown to have some natural durability over that of radiata pine (though not as good as H1.2 treated framing), untreated Douglas fir has been included for use in defined 'low-risk' designed houses. This will be of benefit to those wishing to have chemical-free construction.

Provided all the conditions are met for the design of a house, untreated Douglas fir framing can be used (see Table 2).

### FARM BUILDINGS

The changes also clarify the use of untreated framing for farm buildings. Untreated radiata and Douglas fir framing can be used if framing is:

- protected from direct wetting, and
- has no internal linings, and
- is not in ground contact, and
- is not used in a building with living accommodation.

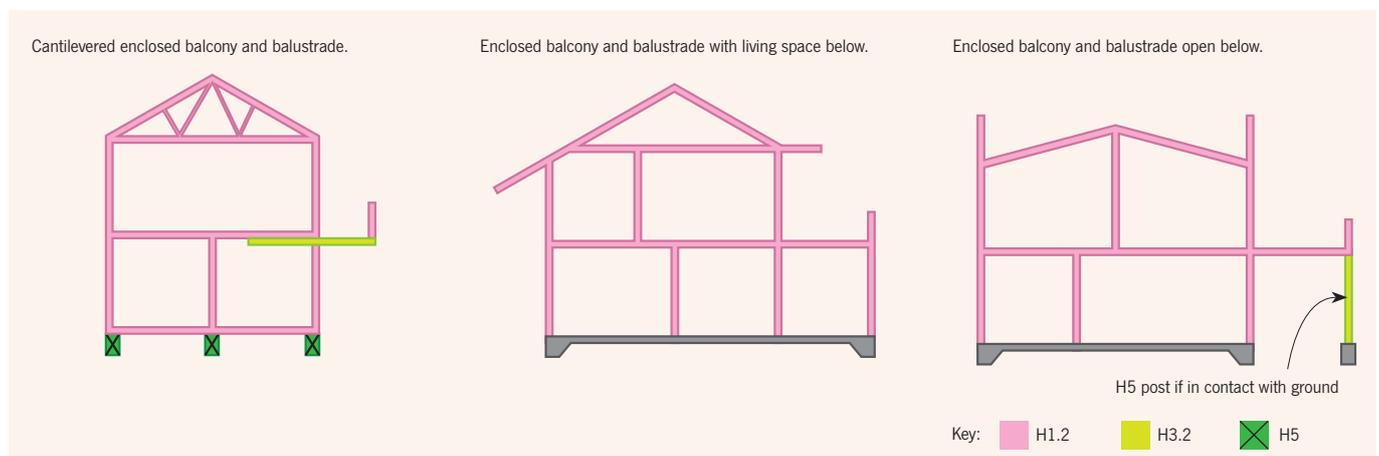


Figure 1: New treatment requirements for timber framing.

**Table 1: Treatment requirements for framing and other timber uses.**

| LEVEL  | SPECIES                      | BUILDING ELEMENTS  |
|--|------------------------------|--|
| <b>Floor framing protected from weather but exposed to ground atmosphere</b> |                              |  |
| H1.2   | Radiata pine<br>Douglas fir  | Jack studs, subfloor braces, bearers, wall plates, floor joists to the subfloor, blocking, walings and battens, nogs and diagonal boards.  |
| H1.2   | Radiata pine<br>Douglas fir  | Interior solid wood flooring for ground floors.  |
| <b>Enclosed roof framing and trusses</b>                                     |                              |  |
| H1.2   | Radiata pine<br>Douglas fir  | Sarking and framing not protected from solar-driven moisture through absorbent cladding materials.   |
| H1.2   | Radiata pine<br>Douglas fir  | Enclosed flat roof framing and associated roof members.  |
| H1.2   | Radiata pine<br>Douglas fir  | Enclosed skillion roof framing and associated roof members.  |
| H1.2   | Radiata pine<br>Douglas fir  | Valley boards and boards supporting flashings or box gutters, and flashings to roof penetrations and upstands to roof decks.   |
| H1.2   | Radiata pine<br>Douglas fir  | All roof trusses, including gable-end trusses, roof framing, ceiling and eaves framing, purlins and battens.   |
| <b>Enclosed wall framing protected from the weather</b>                      |                              |  |
| H1.2   | Radiata pine<br>Douglas fir  | Framing and other members within or beneath a parapet.   |
| H1.2   | Radiata pine<br>Douglas fir  | Framing and other members within enclosed decks or balconies (see H3.2 for cantilevered decks).  |
| H3.2   | Radiata pine                 | Framing and other members within enclosed cantilevered decks (including joist trimmers, nogs and blocking).  |
| H1.2   | Radiata pine<br>Douglas fir  | Framing and other members supporting enclosed decks or balconies (including cantilevered decks).   |
| H3.1   | Radiata pine                 | Battens used behind cladding to form a cavity (H3.1 treatments can be either solvent-based or boron. H3.1 boron treatments supplied grey primer-painted).  |
| H1.2   | Radiata pine<br>Douglas fir  | All other exterior wall framing and other members including exterior and boundary joists.  |
| <b>Internal wall framing</b>   |                              |  |
| H1.2   | Radiata pine<br>Douglas fir  | Internal walls.  |
| <b>Mid-floor framing</b>   |                              |  |
| H1.2   | Radiata pine<br>Douglas fir  | All mid-floor framing, including boundary joists, ceiling framing and ceiling battens and double top plates.   |
| <b>Interior flooring</b>   |                              |  |
| H1.2   | Pinus species<br>Douglas fir | Interior flooring.   |
| <b>Other framing</b>   |                              |  |
| None   | Radiata pine<br>Douglas fir  | Wall framing and roof framing (including trusses) protected from the weather, in unlined and unoccupied farm buildings and outbuildings, except buildings with high internal humidity, such as saunas, spas and so on. |
| H3.2   | Radiata pine                 | Framing exposed to the weather and above ground.   |
| H4   | Radiata pine                 | Framing such as fence posts and landscape timbers that is exposed to the weather and is in contact with the ground.  |
| H5   | Radiata pine                 | Framing such as house piles, poles and crib walling that is exposed to the weather and is in contact with the ground.  |

**Note 1:** For structural use of other species, refer to NZS 3602:2003 Tables 1 and 2.

**Note 2:** For non-structural use of radiata pine, Douglas fir and other species, refer to NZS 3602:2003 Table 3.

**Note 3:** A higher treatment level also satisfies the level specified in this table.

Refer to NZS 3602:2003 for other framing choices, such as larch or macrocarpa.

**SOLVENT-BASED TREATMENTS REMOVED**  
Solvent-based treatments are no longer required for framing. Previously, some parts of the building, such as enclosed flat roof framing, required H3.1 treatments using light organic solvent preservatives (LOSP). Now that H3.1 is no longer required, LOSP treatments can be avoided.

The changes also confirm the removal of LOSP treatments from the H1.2 category. At present, this leaves only boron (pink-coated) framing for H1.2. It is expected that a future amendment of NZS 3640 will consider other H1.2 treatment options such as water-based azoles. In the meantime, pink framing will be the norm on construction sites.

### Higher treatment levels OK

Since at least 2003, NZS 3602 has stated that timber treated to a higher level than the minimum satisfies the minimum. This is a statement of the obvious and not an endorsement for more chemical use.

The research and history of use now strongly indicates that boron-based treatments with average cross-section concentrations of 0.4% mass/mass boric acid equivalent (BAE) or above are adequate to cope with fungal and insect risks for normal framing use and construction practices in New Zealand. H1.2 treatments offer 'opportunity time' for construction and detecting and repairing leaks throughout a building's life. No treatment is capable of permanently protecting framing that remains continuously wet.

An owner or designer who chooses higher levels of treatment for framing is making a choice – these levels are not needed to comply with NZS 3602. They may be chosen in response to durability risks in some exceptional types of buildings, but there are implications and costs. These include the increased environmental effects from timber residues around the home the generally higher costs of purchase and waste disposal and the potential health and safety effects (and costs) for those working with treated timber especially hazard classes H3 and above (see Safety and health on page 42).

*For a good summary, see A quick guide to timber treatment for enclosed framing from the Department of Building and Housing website, [www.dbh.govt.nz](http://www.dbh.govt.nz), then Publications.* ❖

# SAFETY AND HEALTH

Timber treatments generally consist of chemicals that need to be handled safely and appropriately. Important measures to take when using treated timber, especially hazard classes H3 and above, are:

- reduce contact by wearing gloves, goggles and a dust mask
- don't burn off-cuts or cook with them
- dispose of waste in an approved landfill
- wash your hands before using the toilet, smoking or eating
- wash work clothes separately
- ventilate work spaces as much as you can
- working with solvent-damp timber is not advised, so allow solvent-damp timber to properly dry off before use.

Boron has been used commercially as a timber preservative in New Zealand since the 1950s, with no known health issues for timber users or building inhabitants. ◀

**Table 2: Low-risk house conditions when untreated Douglas fir can be used for framing.**

**All the following conditions must be satisfied:**

|   |  |
|---|--|
| ✓ | Is a stand alone, single household unit of no more than two storeys (as defined in NZS 3604) that is designed and constructed to NZS 3604.                                     |
| ✓ | Is situated in wind zones no greater than 'high' as defined in NZS 3604.   |
| ✓ | Has a building envelope complexity no greater than 'medium risk' and a deck design no greater than 'low risk' as defined by the risk matrix in the Acceptable Solution E2/AS1. |
| ✓ | Has drained and vented cavities complying with E2/AS1 behind all claddings.  |
| ✓ | Uses roof and wall cladding systems and details meeting E2/AS1.  |
| ✓ | Has a risk matrix score of no more than 6 on any external wall face, as defined in E2/AS1.   |
| ✓ | Has a simple pitched roof with hips, valleys, gables or monopitches, all draining directly to external gutters.*   |
| ✓ | Has a roof slope of 10° or more.   |
| ✓ | If it has a skillion roof, the roofing material is corrugated iron or concrete, metal or clay tiles for adequate ventilation.  |
| ✓ | Has eaves 450 mm wide or more for single-storey houses and eaves 600 mm wide or more for 2-storey houses.  |

\*The roof does not have internal or secret gutters, concealed gutters behind fascias or any roof element finishing within the boundaries formed by exterior walls (e.g. the lower ends of apron flashings, chimneys, dormers, clerestorey, box windows).