H1.2 FRAMING TIMBER TREATMENT

A single, boron-based treatment class, H1.2, may now be used for almost all enclosed timber framing. This has simplified framing timber, but have treatment processes or on-site handling changed?

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simplified timber treatment system for framing was introduced in April 2011 under Amendment 7 to the Building Code Acceptable Solution B2/AS1. This followed research and consultation and was based on several premises, including:

- simplification of treated timber identification and use on site
- the relative safety of handling treated timber
- the treatment must remain effective after being rain wet for reasonable periods of time
- the treatment must be reasonably priced.

Since 1 July 2011, only B2/AS1 with Amendment 7 incorporated may be used.

Only boron treatment for H1.2 framing now

The B2/AS1 Amendment 7 modified the requirements of NZS 3640:2003 *Chemical preservation of round and sawn timber* and NZS 3602:2003 *Timber and wood-based products for use in building.*

NZS 3640 is the standard governing timber treatment. It defines hazard classes, preservatives, the level of treatment and penetration requirement for each hazard class, and timber identification methods.

When hazard class H1.2 was first identified for framing in the standard, the treatment could be either a boron-based treatment or an LOSP (light organic solvent preservative) treatment type. Since then, the LOSP options using tin-based compounds TBTN (tri-butyltin naphthenate) and TBTO (tri-butyltin oxide) have been withdrawn because of health concerns, such as severe skin and respiratory problems.

Now, only boron-based treatments can be used to treat framing timber to hazard class H1.2. All the LOSP treatments using tin-based and IPBC (iodopropynyl butylcarbamate) preservatives may no longer be used for treatment of H1.2 framing timber.

NZS 3640 also sets out the requirements for penetration and testing of treatments. Section 6, which gives hazard class specifications, requires complete penetration of the sapwood to achieve hazard class H1.2, and Table 6.1 specifies a minimum 0.4 preservative concentration retention. These have not changed for H1.2 boron treatment.

NZS 3602 describes timber and wood-based product use in a building in relation to the durability performance required during the life of the building. Tables 1 and 2 in NZS 3602 have been modified by Tables 1A and 2A in B2/AS1 Amendment 7. These tables set out the levels to which timber framing used in different locations in the building must now be treated.

Look for the pink timber and brand

NZS 3640 requires treated timber to be identified either by end tag (a burn brand or tag at the timber ends) or by strip branding (along the timber edge or face) or packet branding. The branding must include the plant treatment number, the preservative number and the hazard class (see Figure 1).

As end brands are often cut off during the construction, a secondary means of treatment identification is colour-coding. H1.2 boron-treated timber is colour-coded pink – the same as previously.

In the future, an audit stamp to indicate that the treatment and testing process has been independently audited may also be included in the timber identification information.

Protection effective but minimise rain wetting

Boric-treated timber has been used for many years and has proven to provide effective insecticide and fungicide protection while having low toxicity to people. It is specified for above ground, internal situations where the timber is protected from the weather in service. Boron is also an approved H3.1 treatment for external use such as claddings and fascia joinery, but for protection, this must have a grey coating applied at the treatment plant and a well maintained paint system when installed.

As boron compounds are water soluble, they do not become 'fixed' in the wood structure and may leach out by a process of diffusion if the timber is subjected to rain wetting over a prolonged time. It is important to keep timber framing exposure to the weather to a minimum during construction.



Figure 1: Example identification of treated timber.

Treatment process changed

Historically, boron treatment was applied to green timber. The timber was sprayed or dipped in the preservative solution and block stacked, i.e. without fillets, then covered and left for 6–8 weeks to allow the preservative to diffuse into the wood. The process required the timber to maintain a moisture content of over 50% during the entire time. Larger timber sections needed a longer diffusion period and could also require a higher strength preservative solution.

With the requirement for dry framing, the treatment process had to change. A vacuum pressure treatment is now typically used to boric-treat timber. The timber is first kiln dried and machined. Before treatment, the timber typically has a moisture content of 12-16%. This may increase by 3-5% after treatment – 20% or less is an acceptable timber moisture content level for framing before lining of walls. The whole process, from kiln drying to end of treatment can be carried out in as little as 36 hours.

Regular testing of samples

To test the penetration of the preservative in timber, representative cross-section samples are sprayed using a chemical reagent appropriate to the preservative, in accordance with AS/NZS 1605. Evidence of the preservative must be found throughout the required penetration zone.

Timber samples are also regularly sent away for independent laboratory testing. Each treatment plant must have a quality assurance plan and standard operating procedures in place that determine the frequency of testing based on the volume of timber being treated. For small producers, this must occur at least 3-monthly. Independent audits are carried out on a regular basis to monitor the systems and processes used by the treatment plant.

Correct handling on site important

On site, the timber must be protected from moisture and damage. Protective measures include:

- keeping timber covered during transport and storage prior to use
- storing packets of timber on treated bearers clear of ground contact, vegetation and water
- closing timber framing in as soon as possible during construction.

Remember health and safety precautions

The handling of any timber, including untreated timber, requires precautions to be taken by everyone – from those who carry out timber treatment to those working with the timber.

Precautions for use and handling include to:

- wear gloves and clothing with long sleeves when handling timber
- wear safety glasses and a filter mask when cutting and sanding timber
- work in a well ventilated environment and carry out cutting, sanding and so on outside
- always wash hands after handling treated timber
- wash clothes with sawdust on separately from other clothing
- never burn off-cuts or use the timber for cooking fires, for example, barbecues
- dispose of waste timber and residues in an approved landfill.