On-site framing treatment

A study into the on-site treatment of undamaged framing in leaky buildings has come up with several practices to follow when treating timber members.

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A 3-YEAR INVESTIGATION into the effectiveness of on-site treatment of undamaged framing when remediating a leaky building was carried out by Scion for the Ministry of Business, Innovation and Employment.

Areas covered were:
- the efficacy of brush-on remedial treatments
- how to achieve adequate penetration in difficult-to-access members
- the treatment of lintels.

**Brush-on treatments**

In the first study, untreated radiata framing was exposed to brown rot decay fungi, dried and then treated with brush-on preservative. Two brush-on coats of copper naphthenate or boron glycol were applied to either one, two, three or four faces of 90 x 45 mm samples of framing. The samples were then exposed to wet conditions – over 30% and 24–30% moisture content – for 3 years.

The results showed:
- treatment on three or four sides of a member with boron glycol gave effective protection against brown rot decay
- copper naphthenate slowed development but did not prevent decay
- samples containing boron lost some preservative through wetting, but the preservative was redistributed through the sample
- retention of boron if coated on three or four sides was generally above the minimum 0.4% boric acid equivalent (BAE) requirement for H1.2.

**Difficult-to-access framing**

Effective retention rates and protection were only achieved where brush-on treatment was applied to three or four sides. Therefore, second and third studies were undertaken to identify how laminated members – multiple studs and laminated lintels – with hidden faces could be treated to achieve the desired durability.

Triple studs, as on a window or door jamb, were given two coats of brush-on preservative and then injected with boron glycol preservative.

Figure 1: Distribution of preservative between lintel members.
The preservative was injected into 6 mm holes, 80 mm deep, that had been drilled at 300 mm centres between the laminated studs. A similar procedure was carried out for the lintels, but the holes were drilled at varying centres in one or two rows – lintel depths varied between 200–300 mm – to identify a suitable relationship between lintel size and injection centres for sufficient retention of preservative.

In both investigations, although the distribution of the boron glycol solution varied on the inside faces of the members, in almost all cases, retentions were similar to the 0.4% required for H1.2 treatment (see Figure 1).

**Recommended practices**

The research found that the boron glycol type preservatives with a minimum concentration of 20% BAE applied in two brush coats approximately a half hour apart to retained undamaged framing that had three or more faces exposed provided adequate protection from moisture and would even prevent fungi infestation from recurring in wet conditions.

In addition to brushing on two coats of boron preservative, similar levels of protection in laminated members can be achieved by drilling and injecting preservative between the members.

**Studs**

For studs where three faces cannot be accessed, a combination of two coats of boron glycol applied by brush to the exposed faces and the injection of the preservative into holes drilled into the interface between the studs achieves the desired retention levels.

The holes should be 6 mm diameter, 80 mm deep, at 300 mm centres and at a 30° slant (see Figure 2). The holes should be injected with 10 ml of treatment solution followed by a second injection 30 minutes later.

**Lintels**

For lintels, two coats of boron glycol should be brush applied to all exposed faces, followed by the injection of 10 ml of boron glycol, then followed by a second injection 30 minutes later.

The holes should be 6 mm diameter at 100 mm centres, 45 mm deep and 10 mm below the top edge of the lintel slanted at 30° (see Figure 3).

Adhesive tape should be applied to the bottom of the joint to minimise leakage. Where there are obvious gaps between lintel members, clamping the members together will improve coverage.

**Caution if decay between members**

This method of treatment should not be used where there is the likelihood of decay between members.

With boundary joists, it is preferable to remove the outer boundary joist to check for decay prior to treatment.

**About Scion**

Scion is a Crown research institute that undertakes research, science and technology development in forestry, wood products, biomaterials and bioenergy.

It is developing new technologies that will enable plantation-grown softwoods to be used in new places and markets. One area of specialty is chemical and non-chemical treatment processes to improve the durability, stiffness, hardness, water repellence, appearance and stability of wood. Part of this work includes testing wood preservation treatments for durability and developing accelerated decay testing protocols that contribute to New Zealand and Australian building standards.

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