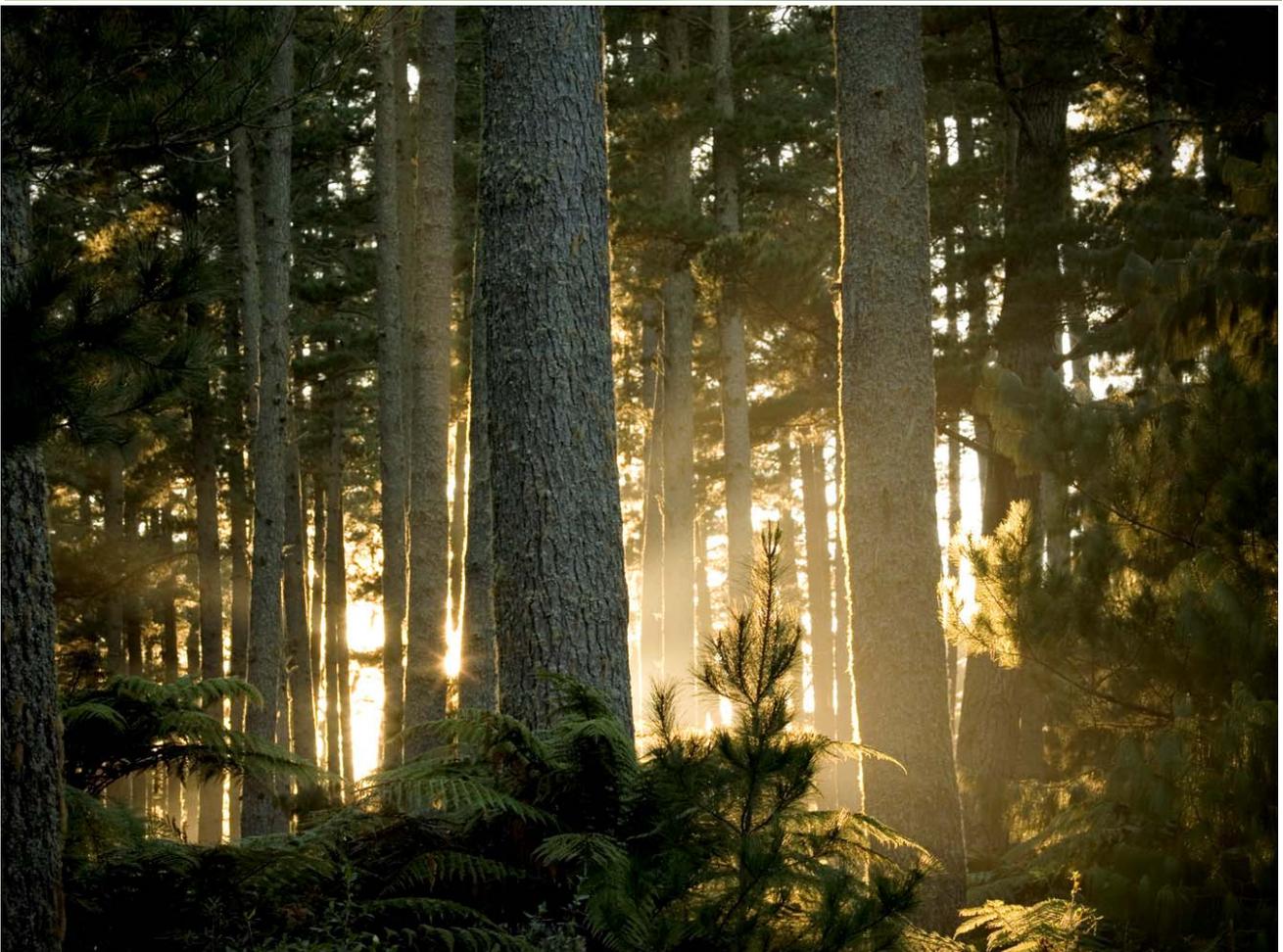


THE EFFICACY OF BRUSH-ON REMEDIAL TREATMENTS ON RADIATA PINE FRAMING

30-MONTH PROGRESS REPORT – September 2011

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SUMMARY

Untreated radiata pine framing timber was exposed to brown rot decay fungi and then treated with brush-on remedial preservatives. Over the 56-108 week exposure period patches of fresh decay mycelium had continued to develop on many of the high moisture content, copper naphthenate treated samples, regardless of the number of surfaces treated. However, there was no obvious fresh mycelium on high moisture content samples that had been treated with boron at the 108-week assessment. There was very little mycelium development on samples held in low moisture content conditions but fruiting bodies and decay were present in a few of the control samples or “treated two edges” samples in the lower half of the stack. The noticeable changes in ‘index of condition’ and deflection were generally restricted to samples treated only on one or two surfaces. At this stage there have been no assessments of internal decay patterns or preservative retention and distribution through the samples. This would be useful before the trial is concluded.

INTRODUCTION

Radiata pine, 90 mm x 45 mm, planer gauged, kiln dried, framing samples were wet and exposed to brown rot decay fungi for several weeks. They were then re-dried and brush-on remedial treatment products were applied, either 50/50 copper naphthenate and kerosene or a boric acid/borax mixture in monoethylene glycol (20% BAE). The samples were then rewet and exposed in humid controlled conditions.

Details of treatments, installation and trial progress over the first 32 weeks and after 56 weeks exposure are contained in earlier progress reports. The trial was assessed for decay, mould and deflection at eight-week intervals from the start of the main exposure period in September 2009 to September 2010 and then at six-monthly intervals until September 2011. These assessments are also summarised in earlier reports. This report summarises the changes in the condition of the samples over the 84 to 108-week exposure period (HMC) and the 84 to 107-week exposure period (LMC).

ASSESSMENT METHODS AND RESULTS

The samples were removed from the high moisture content exposure tanks (HMC) and low moisture content stack (LMC), weighed and measured. Visual assessments of decay mycelium development and mould infection were completed using the ratings systems shown in Appendix I. Moisture content calculations were based on changes in sample weight. The surfaces of each sample were tested with a blunt probe to determine whether the decay fungi were damaging the framing. Deflection as a plank under a constant load was measured. Moisture content and mould ratings are summarised in Table 1, decay ratings and deflection data are summarised in Table 2.

After assessment the samples were returned to their original exposure positions. The HMC samples were sprayed with water as they were re-installed but the LMC samples were protected from wetting.

TABLE 1
MOISTURE CONTENT AND MOULD RATINGS AFTER 108 WEEKS

| Treatment Group Code | Moisture content % | | | Mould Ratings | | |
|--|--------------------|-----------------|-----------------|---------------|----------|-----------|
| | 56 weeks | 84 weeks | 108 weeks | 56 weeks | 84 weeks | 108 weeks |
| High Moisture Content Groups | | | | | | |
| C61H | 38 | 38 ¹ | 43 ¹ | 4.6 | 4.5 | 4.5 |
| C62H | 37 | 32 ¹ | 32 ¹ | 4.6 | 4.6 | 4.4 |
| C63H | 42 | 34 | 41 | 3.9 | 3.8 | 4.1 |
| C64H | 41 | 36 | 39 | 3.0 | 3.0 | 3.2 |
| B61H | 34 | 28 ¹ | 31 ¹ | 4.9 | 4.9 | 4.9 |
| B62H | 38 | 34 | 35 | 5.0 | 4.6 | 4.7 |
| B63H | 45 | 35 | 37 | 4.1 | 3.9 | 4.2 |
| B64H | 58 | 43 | 49 | 3.1 | 3.4 | 3.2 |
| C31H | 41 | 36 ¹ | 44 ¹ | 4.4 | 4.3 | 4.3 |
| C32H | 37 | 33 ¹ | 34 ¹ | 4.1 | 4.1 | 4.2 |
| C33H | 37 | 39 | 42 | 3.5 | 3.5 | 3.6 |
| C34H | 39 | 34 | 37 | 2.8 | 2.9 | 2.9 |
| B31H | 34 | 26 ¹ | 29 ¹ | 4.8 | 4.7 | 4.8 |
| B32H | 36 | 32 | 36 | 4.8 | 4.7 | 4.6 |
| B33H | 43 | 35 | 38 | 3.8 | 4.1 | 4.2 |
| B34H | 50 | 40 | 42 | 3.0 | 3.1 | 3.3 |
| B3H | 53 | 47 | 52 | 2.4 | 2.3 | 2.3 |
| U3H | 33 | 28 ¹ | 31 ¹ | 4.2 | 4.5 | 4.4 |
| UMH | 36 | 34 | 37 | 4.4 | 4.6 | 4.6 |
| Low Moisture Content Groups (107 weeks) | | | | | | |
| C62L | 23 | 21 | 21 | 4.1 | 4.6 | 4.6 |
| C64L | 25 | 24 | 23 | 3.5 | 4.2 | 4.3 |
| B62L | 24 | 24 | 25 | 3.8 | 4.0 | 4.4 |
| B64L | 29 | 30 | 31 | 2.3 | 2.2 | 2.3 |
| C32L | 26 | 24 | 22 | 4.1 | 4.6 | 4.7 |
| C34L | 27 | 26 | 25 | 3.6 | 3.8 | 4.0 |
| B32L | 27 | 28 | 27 | 3.9 | 4.1 | 4.1 |
| B34L | 28 | 33 | 32 | 2.2 | 2.2 | 2.2 |
| B3L | 30 | 32 | 34 | 2.2 | 2.2 | 2.2 |
| U3L | 25 | 19 | 22 | 4.1 | 4.4 | 4.6 |
| UML | 27 | 25 | 25 | 4.0 | 4.2 | 4.3 |

¹ Extensive decay in some samples from this group reduced their weight, therefore moisture content calculations based on weight are likely to be inaccurate.

The average moisture content of the HMC samples declined slightly in the 56 to 84-week exposure period due to less frequent assessments and associated rewetting. Between the 84 and 108-week assessments the tanks were opened and sprayed more frequently and the moisture content of samples increased slightly. Most samples were above 30% moisture

content and those where the calculated moisture content was well below 30% all contained significant decay.

The moisture content of the LMC samples remained relatively constant through the 56 to 107-week exposure period. The only samples with moisture content above 30% in the LMC stack were in the bottom three layers.

TABLE 2
MYCELIUM SPREAD, INDEX OF CONDITION AND DEFLECTION

| Group | Mycelium Spread Rating | | | Index of Condition ¹ | | | Deflection (mm) | | |
|--|------------------------|-------|-------|---------------------------------|-------|-------|-----------------|-------|-------|
| | Code | 56-wk | 84-wk | 108-wk | 56-wk | 84-wk | 108-wk | 56-wk | 84-wk |
| High Moisture Content Groups | | | | | | | | | |
| C61H | 3.4 | 3.7 | 4.2 | 7.6 | 7.2 | 6.5 | 2.36 | 2.58 | 3.04 |
| C62H | 3.6 | 3.7 | 4.2 | 7.8 | 7.0 | 6.5 | 2.46 | 2.74 | 2.94 |
| C63H | 3.1 | 2.5 | 3.2 | 8.0 | 7.8 | 7.6 | 2.16 | 2.19 | 2.31 |
| C64H | 1.1 | 1.5 | 1.9 | 8.0 | 7.9 | 7.8 | 2.16 | 2.14 | 2.22 |
| B61H | 3.6 | 3.9 | 4.1 | 7.3 | 6.9 | 6.5 | 2.31 | 2.63 | 2.92 |
| B62H | 1.5 | 1.8 | 1.5 | 8.0 | 8.0 | 8.0 | 2.38 | 2.36 | 2.40 |
| B63H | 1.2 | 1.2 | 1.1 | 8.3 | 8.3 | 8.2 | 2.13 | 2.10 | 2.16 |
| B64H | 1.0 | 1.0 | 1.0 | 8.2 | 8.1 | 8.1 | 2.19 | 2.16 | 2.24 |
| C31H | 3.3 | 3.6 | 4.3 | 7.6 | 7.3 | 6.9 | 2.46 | 2.71 | 2.93 |
| C32H | 3.2 | 3.8 | 4.2 | 7.9 | 7.0 | 6.3 | 2.50 | 2.74 | 3.06 |
| C33H | 2.1 | 2.7 | 3.2 | 8.7 | 8.3 | 7.8 | 2.47 | 2.52 | 2.64 |
| C34H | 1.3 | 1.8 | 2.7 | 8.8 | 8.4 | 8.3 | 2.29 | 2.32 | 2.46 |
| B31H | 4.1 | 4.2 | 4.5 | 6.9 | 6.5 | 6.0 | 2.69 | 3.39 | 3.62 |
| B32H | 1.7 | 1.8 | 1.6 | 9.0 | 8.5 | 8.5 | 2.30 | 2.25 | 2.32 |
| B33H | 1.0 | 1.0 | 1.0 | 9.5 | 9.2 | 9.2 | 2.33 | 2.26 | 2.32 |
| B34H | 1.0 | 1.0 | 1.0 | 9.3 | 9.0 | 8.9 | 2.18 | 2.13 | 2.19 |
| B3H² | 1.0 | 1.0 | 1.0 | 10.0 | 10.0 | 10.0 | 3.88 | 3.88 | 3.88 |
| U3H | 3.9 | 4.2 | 4.5 | 7.2 | 6.2 | 5.1 | 2.66 | 3.24 | 4.11 |
| UMH | 2.7 | 2.5 | 2.4 | 9.4 | 8.9 | 8.5 | 2.28 | 2.31 | 2.39 |
| Low Moisture Content Groups (107 weeks) | | | | | | | | | |
| C62L | 3.1 | 3.3 | 3.8 | 6.4 | 5.4 | 5.4 | 3.19 | 3.62 | 3.75 |
| C64L | 1.3 | 1.5 | 1.6 | 7.9 | 7.3 | 7.3 | 2.35 | 2.38 | 2.52 |
| B62L | 2.4 | 2.6 | 2.8 | 7.7 | 7.5 | 7.5 | 2.55 | 2.59 | 2.61 |
| B64L | 1.0 | 1.0 | 1.0 | 8.0 | 8.0 | 8.0 | 2.29 | 2.29 | 2.39 |
| C32L | 2.2 | 2.6 | 2.9 | 8.1 | 7.3 | 7.3 | 2.22 | 2.63 | 3.15 |
| C34L | 1.0 | 1.0 | 1.1 | 8.2 | 8.1 | 8.0 | 2.08 | 2.10 | 2.21 |
| B32L | 1.1 | 1.3 | 1.6 | 8.3 | 8.3 | 8.1 | 2.09 | 2.08 | 2.18 |
| B34L | 1.0 | 1.0 | 1.0 | 8.2 | 8.4 | 8.4 | 2.30 | 2.28 | 2.39 |
| B3L² | 1.1 | 1.0 | 1.0 | 10.0 | 10.0 | 10.0 | 3.73 | 3.64 | 3.84 |
| U3L | 2.5 | 2.9 | 3.4 | 6.3 | 5.6 | 5.0 | 3.37 | 3.59 | 4.21 |
| UML | 1.7 | 1.4 | 1.9 | 9.6 | 8.3 | 8.1 | 2.25 | 2.88 | 2.99 |

¹ Index of Condition is the average decay rating for all of the samples in a group.

² This group was framing grade timber, all other groups were clears grade sapwood.

Mould infection was relatively severe on untreated surfaces. Moulds on samples in the HMC tanks remained relatively constant from 56 to 108 weeks. In the LMC stack moulds increased slightly, mainly on the copper naphthenate and untreated samples but there was also a slight increase on the samples treated with boron on two edges.

There were only minor changes in decay rate for samples treated on three or four surfaces but definite steady declines in the untreated controls and the samples treated on one or two edges (Figure 1). The modulus of elasticity (MOE) for the same treatment groups has similar trend as for the Index of Condition data with only minor changes for samples treated on three or four sides but steadily increasing stiffness loss for control samples and those treated on one or two edges (Figure 2).

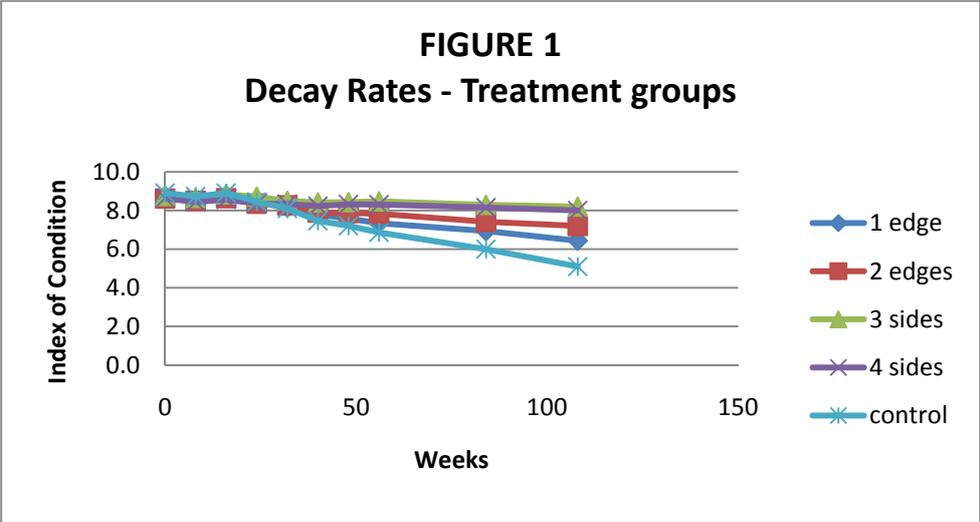


Figure 1. Changes in the “Index of Condition”, regardless of the preservative used or the exposure conditions, as the trial progressed.

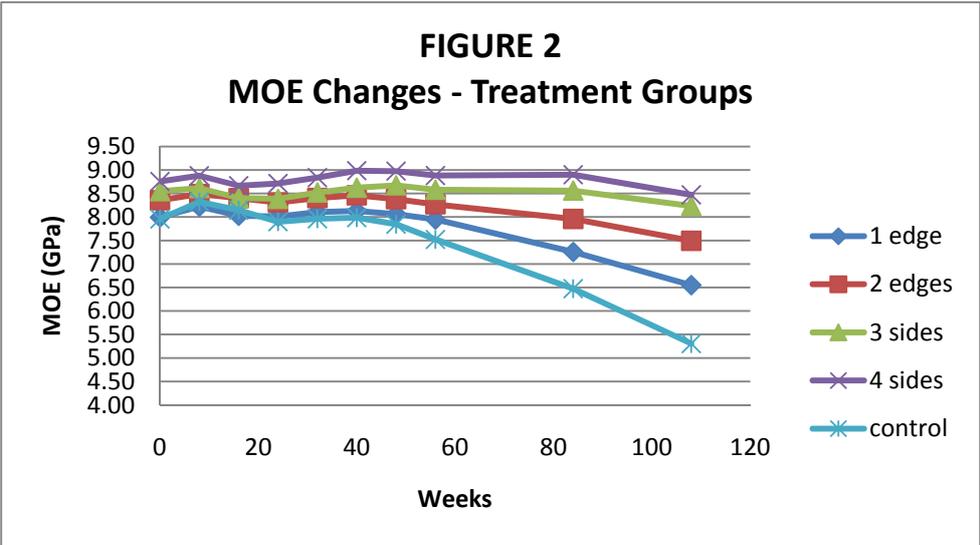


Figure 2. The modulus of elasticity (MOE) regardless of the preservative used or the exposure conditions, as the trial progressed.

Noticeable deflection increases and changes in MOE have generally been restricted to those samples which contained moderate-severe decay (ratings 6 or lower). In the HMC exposure tanks this included 31% of the copper naphthenate samples treated on one or two edges and 29% of the boron samples treated on one edge only. If the MOE figures for the treatment groups are separated by preservatives, the copper naphthenate samples treated on one or two edges show quite distinct and similar stiffness loss (Figure 3). The samples treated on three or four sides also show some stiffness loss between the 56 and 108-week assessments. By comparison the boron samples treated on one edge are the only treatment group showing any obvious MOE loss (Figure 4). The MOE for the samples treated with boron on two or more sides may be trending down slightly but there was very little change in any of the groups.

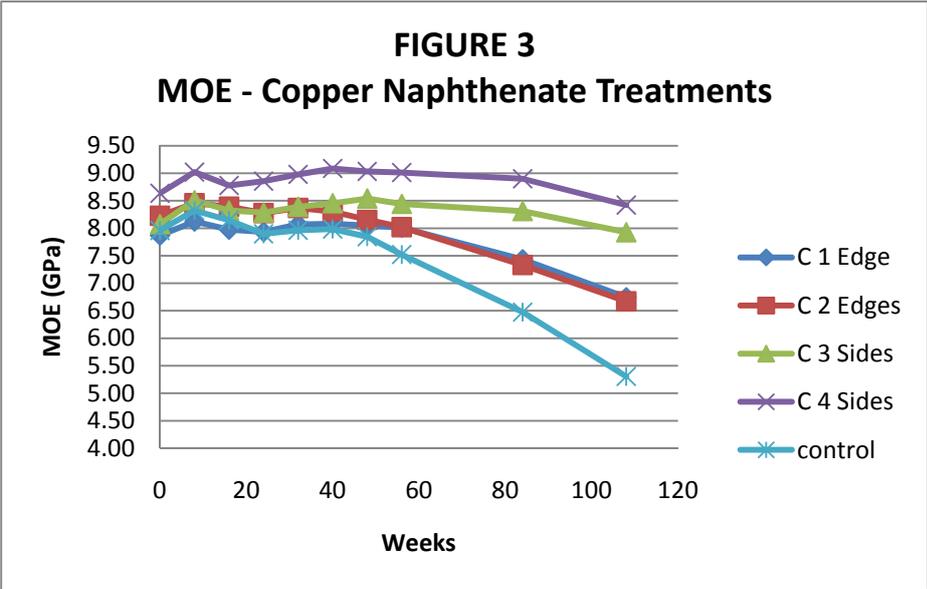


Figure 3. The modulus of elasticity (MOE) for copper naphthenate treated samples.

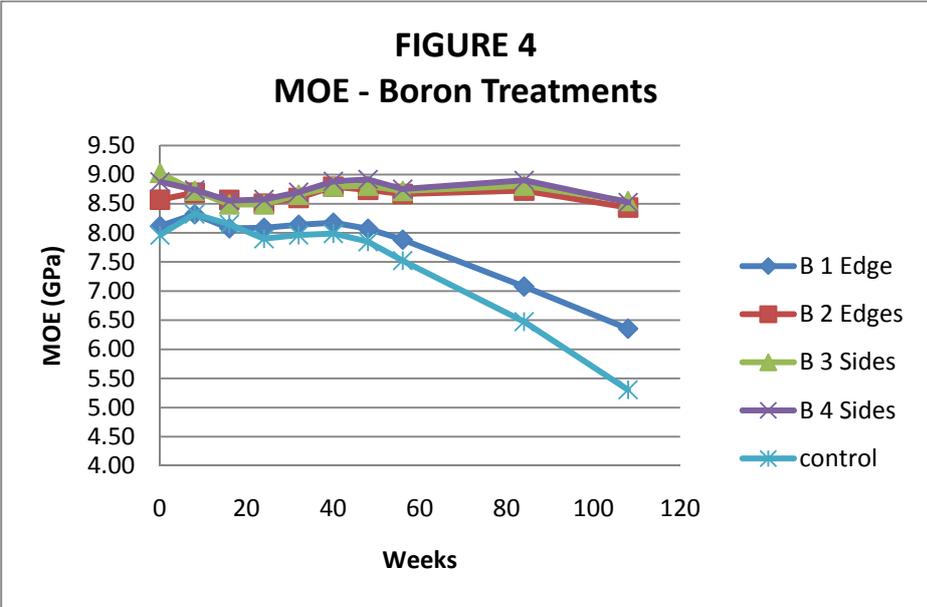


Figure 4. The modulus of elasticity (MOE) for boron treated samples.

Figures 5 and 6 compare the MOE of LMC exposure stack treatment groups with the equivalent groups from the HMC exposure tanks. These show that the samples treated on two edges with copper naphthenate are rapidly losing stiffness whereas the boron treated samples and those treated with copper naphthenate on four sides are only changing very slowly. There was very little difference between HMC and the LMC exposure.

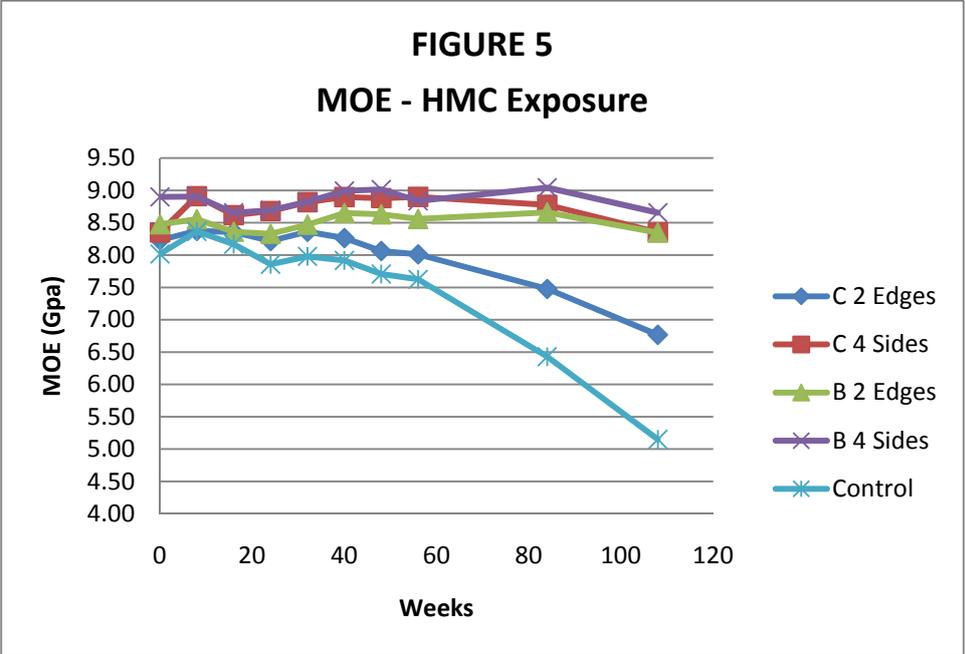


Figure 5. The modulus of elasticity (MOE) in high moisture content tanks.

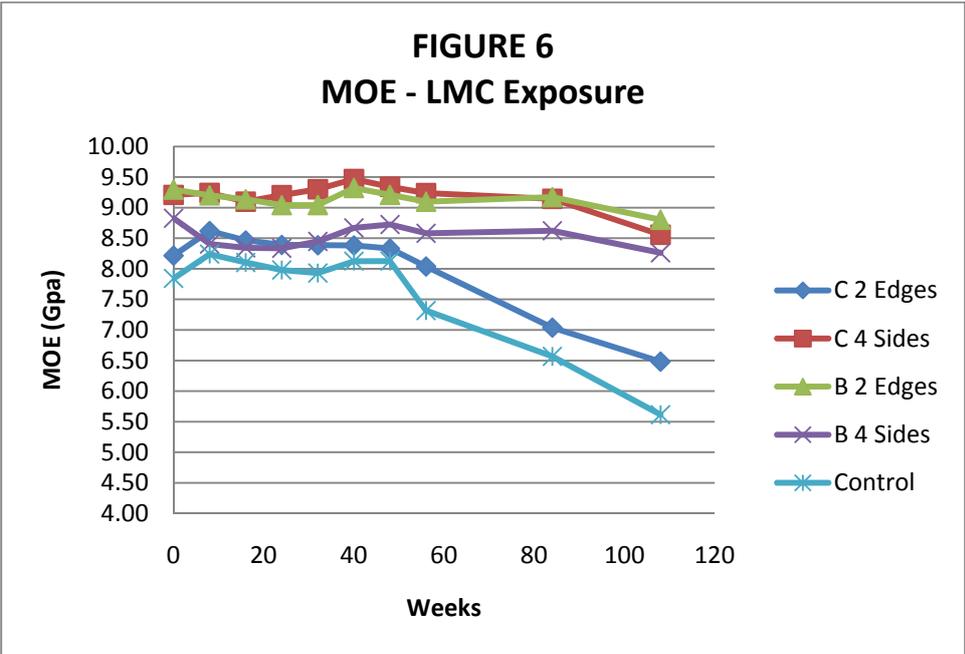


Figure 6. The modulus of elasticity (MOE) in low moisture content stack. The zone on the samples decayed by fungi from the feeder blocks before treatment remained clearly visible through the exposure period. At the 84-week assessment decay mycelium was

actively growing on the untreated surfaces of both boron and copper naphthenate treated samples in the HMC exposure tanks. It was also beginning to spread onto the treated surfaces of the copper naphthenate treated samples (Figures 7, 9, 11 and 13). The spread of mycelium continued in the 84 to 108-week exposure period on copper naphthenate treated and untreated samples but seemed to have stopped on the boron treated samples (Figures 8, 10, 12 and 14).

A few patches of what appeared to be decay fungi other than *Oligoporus placenta* had developed on untreated samples in the HMC exposure tanks but their progress was generally very slow (Figure 20).

In the LMC exposure stack the *Gloeophyllum sepiarium* decay fungi used in the feeder blocks produced very little mycelium on the surfaces of the samples, compared to the *Oligoporus placenta* used on the HMC samples. Slight changes in the colour of the wood surface were the main evidence of decay before fruiting bodies appeared (Figure 23).

After 108 weeks four control samples had failed in the HMC exposure tanks. Four untreated samples had also failed in the LMC stack after 107 weeks exposure. Five copper naphthenate treated samples had failed, one treated on one edge from the HMC tanks and four treated on two edges, two from the HMC tanks and two from the LMC stack. Eleven further treated samples contained severe decay and were close to failure, six treated on one or two edges with copper naphthenate and five treated with boron on one edge. All of the failed or severely decayed samples in the LMC exposure stack were from the bottom four layers.

In the LMC exposure stack decay fruiting bodies have appeared on the ends or untreated surfaces of six copper naphthenate treated samples, including three treated on four sides (Figures 21 and 22).

The samples treated with boron to the H1.2 specification were sound and had not changed in either the HMC exposure tanks or the LMC stack.

Considering the efficacy differences between the two preservative and variation associated with the number of surfaces coated, it would be useful to examine how decay has developed internally in some of the samples. This should be done in conjunction with some assessment of preservative distribution through the sample cross-section. Spraying of samples in the HMC exposure tanks with water is likely to have caused some loss of preservative, particularly from the boron treated samples. Chemical analyses of samples to determine remaining preservative retention at the end of the trial would also be useful.

CONCLUSIONS

At this stage boron brushed on to four surfaces appears to have prevented further decay development. The same could be said for boron brushed on to three surfaces although there was one sample where decay mycelium spread along the untreated surface in the early stages of the trial but became inactive after the 20-week assessment. Boron brushed on to one or two edges has not been sufficient to stop further decay development in pre-infected samples. Copper naphthenate has not been successful in preventing decay, regardless of the number of surfaces treated. Although the Index of Condition and MOE averages for the groups treated with copper naphthenate on three or four sides have changed very little there were a few samples in each of the groups which contained active and progressive decay.

The preservative retention in samples treated with boron on three or four sides was about 0.4% (BAE w/w) and 0.65% (BAE w/w) respectively. This is close to or above the cross sectional retention required by the H1.2 specification. The copper retention for samples treated with copper naphthenate on four sides was between 0.04% and 0.05%, somewhat less than would normally be required for decay prevention. The retention in samples treated with copper naphthenate on less than four sides was proportionally less. If copper naphthenate is to be used for remedial treatments it should be used in a less dilute form than the 50/50 kerosene/copper naphthenate solution used in this trial.



Figure 7 – Copper naphthenate treated HMC samples in tank 1, layer 6 (top), after 84 weeks exposure. Patches of active, fresh decay mycelium on several samples spreading on to the treated edge of sample B32H1 near the centre of the tank.



Figure 8 – Copper naphthenate treated HMC samples in tank 1, layer 6 (top), after 108 weeks exposure. Patches of active, fresh decay mycelium on many of the samples. Active mycelium is visible on the treated surfaces of the two samples at the bottom and the 5th sample from the top in this photo.



Figure 9 – Copper naphthenate treated HMC samples in tank 1, layer 4 (3rd from top), after 84 weeks exposure. Samples were relatively dry but there was fresh mycelium on the treated edge of sample C32H/18.



Figure 10 – Copper naphthenate treated HMC samples in tank 1, layer 4 (3rd from top), after 108 weeks exposure. Samples were drier than in the top layer but there were fresh mycelium patches on the treated surfaces of the 2nd and 4th samples from the top and the 4th sample from the bottom in this photo.



Figure 11 – HMC boron treated samples in tank 4, layer 6 (top), after 84 weeks exposure. Decay mycelium was beginning to degenerate but there were some patches of fresh growth.



Figure 12 – HMC boron treated samples in tank 4, layer 6 (top), after 108 weeks exposure. Decay mycelium appeared to be less active than in the tanks containing the copper naphthenate treated samples. The samples with severe mycelium on them were all treated on the lower edge only.



Figure 13 – HMC boron treated samples in tank 4, layer 4 (3rd from top), after 84 weeks exposure. The samples were relatively dry but there was occasional fresh mycelium on the samples and patches of degenerating mycelium.



Figure 14 – HMC boron treated samples in tank 4, layer 4 (3rd from top), after 108 weeks exposure. There was no fresh mycelium on the samples. The 3rd from the bottom in this photo was untreated and failed at the 108-week assessment. The other samples with mycelium on them were treated on the lower edge only.



Figure 15 – LMC sample stack in the controlled condition room after 107 weeks exposure. There were decay fruiting bodies on the ends of four samples in the bottom row (layer 1) and on a few other samples in the stack up to layer 7. These were either untreated control samples or samples that had been treated on two edges only.



Figure 16 – HMC sample C62H/8, copper naphthenate treated on two edges, after 108 weeks exposure. There was extensive mycelium developing on all surfaces. Decay was mainly on the untreated faces and on the edge where the original decay feeder block had been attached. here was only minor decay under the mycelium on the treated edges.



Figure 17 – HMC sample C64H/16, treated with copper naphthenate on four sides, after 108 weeks exposure. Moderate decay has spread and broken through to the surface from the original decay feeder block infection site.



Figure 18 – HMC sample B61H/12, treated with boron on one edge, after 108 weeks exposure. Extensive mycelium and severe decay on the untreated surfaces away from the boron treated edge.



Figure 19 – HMC sample B62H/20, treated with boron on two edges, after 108 weeks exposure. No active decay mycelium on the surface but moderate decay in the centre away from the boron treated edges.



Figure 20 – Untreated sample UMH/15 (not pre-infected), after 108 weeks exposure. Decay mycelium and small decay pockets, probably from outside contamination, developing along the length of the sample.



Figure 21– LMC sample C64L/7, treated with copper naphthenate on four sides, after 107 weeks exposure. A decay fungi fruiting body on the end was the only indication that there was an internal decay pocket extending out from the original decay feeder block infection.



Figure 22 – LMC sample C32L/3, copper naphthenate treated on two edges, after 107 weeks exposure. There was severe decay and associated fruiting bodies on both faces, spreading onto the treated edges.



Figure 23– LMC sample B62L/3, boron treated on two edges, after 107 weeks exposure. There was light-moderate decay spreading internally towards one end from the original decay feeder block infection area.

APPENDIX I

RATINGS SYTEMS USED FOR SAMPLE ASSESSMENTS

Mycelium Spread Ratings

- 1 = No mycelium development onto the sample surface.
- 2 = Mycelium on the surface in the immediate vicinity of the feeder block.
- 3 = Active mycelium from the feeder block on the surface, spread <50 mm.
- 4 = Active mycelium development >50 mm from the feeder block.
- 5 = Extensive mycelium development over <50% of the surface area.
- 6 = Extensive mycelium development over >50% of the surface area.

Mould Ratings

- 1 = No perceivable mould.
- 2 = Light mould patches or a few widely scattered spots.
- 3 = Numerous spots or widespread light mould.
- 4 = Severe mould, up to 50% coverage.
- 5 = Severe mould, >50% coverage.

Decay Ratings

- 10 = No decay.
- T = Trace, discolouration or softening, not positively identified as decay.
- 9 = First stages of decay or damage up to 3% of cross-section.
- 8 = Lightly established decay, 3-10% of cross-section.
- 7 = Well established decay, 10-30% of cross section.
- 6 = Deep established decay, 30-50% of cross section.
- 4 = Severe decay, nearing failure, more than 50% of the cross section.
- 0 = Failed.

APPENDIX IIa

INDIVIDUAL SAMPLE DETAILS AFTER 108 WEEKS EXPOSURE

| Sample No | OD Wt Calc | Weight Wet | MC % | Ratings | | | Deflect (mm) | MOE (GPa) |
|--|------------|-------------------------|-----------|------------|------------|------------|--------------|-------------|
| | | | | Mycel | Decay | Mould | | |
| HMC/ 6-week predecay, Copper naphthenate treatment 1 edge | | | | | | | | |
| C61H/1 | 1738 | 2266 | 30 | 5 | 6 | 4.5 | 2.61 | 7.17 |
| C61H/2 | 1695 | 2220 | 31 | 3 | 7 | 5.0 | 2.36 | 7.77 |
| C61H/3 | 1648 | 2228 | 35 | 5 | 6 | 4.5 | 2.49 | 7.45 |
| C61H/4 | 1667 | 2244 | 35 | 5 | 6 | 4.5 | 4.30 | 4.48 |
| C61H/5 | 1909 | 2486 | 30 | 4 | 7 | 5.0 | 2.84 | 6.27 |
| C61H/6 | 1857 | 2342 | 26 | 5 | 6 | 4.5 | 4.60 | 4.10 |
| C61H/7 | 1618 | Failed 108 Weeks | | | 0 | | 8.00 | 0.00 |
| C61H/8 | 1967 | 2706 | 38 | 3 | 8 | 4.5 | 2.41 | 7.67 |
| C61H/9 | 1481 | 1898 | 28 | 4 | 7 | 4.5 | 3.62 | 5.10 |
| C61H/10 | 1983 | 2669 | 35 | 4 | 7 | 5.0 | 1.79 | 9.89 |
| C61H/11 | 1623 | 3120 | 92 | 5 | 6 | 3.5 | 3.39 | 5.50 |
| C61H/12 | 1801 | 2493 | 38 | 5 | 6 | 4.5 | 2.88 | 6.35 |
| C61H/13 | 1780 | 2603 | 46 | 4 | 7 | 4.5 | 2.46 | 7.50 |
| C61H/14 | 1820 | 4119 | 126 | 2 | 8 | 4.0 | 1.97 | 9.06 |
| C61H/15 | 1774 | 2358 | 33 | 5 | 6 | 4.5 | 2.03 | 8.97 |
| C61H/16 | 1809 | 2533 | 40 | 4 | 7 | 4.5 | 2.08 | 8.95 |
| C61H/17 | 1958 | 2459 | 26 | 3 | 9 | 4.5 | 2.82 | 6.85 |
| C61H/18 | 1919 | 2478 | 29 | 5 | 7 | 4.5 | 2.37 | 7.46 |
| C61H/19 | 1443 | 1939 | 34 | 4 | 6 | 4.5 | 2.97 | 6.31 |
| C61H/20 | 1595 | 2460 | 54 | 4 | 7 | 4.0 | 2.81 | 6.83 |
| | | | 43 | 4.2 | 6.5 | 4.5 | 3.04 | 6.68 |

APPENDIX IIa (contd.)

INDIVIDUAL SAMPLE DETAILS AFTER 108 WEEKS EXPOSURE

| Sample No | OD Wt Calc | Weight Wet | MC % | Ratings | | | Deflect (mm) | MOE (GPa) |
|---|------------|------------------------|-----------|------------|------------|------------|--------------|-------------|
| | | | | Mycel | Decay | Mould | | |
| HMC/ 6-week predecay, Copper naphthenate treatment 2 edges | | | | | | | | |
| C62H/1 | 1817 | 2522 | 39 | 4 | 7 | 4.5 | 2.23 | 7.99 |
| C62H/2 | 1637 | 2154 | 32 | 5 | 4 | 4.0 | 3.22 | 5.68 |
| C62H/3 | 1907 | 2756 | 45 | 5 | 7 | 4.0 | 2.46 | 7.32 |
| C62H/4 | 1466 | 1868 | 27 | 5 | 7 | 4.5 | 3.9 | 4.81 |
| C62H/5 | 1958 | 2574 | 31 | 4 | 7 | 4.5 | 1.96 | 9.33 |
| C62H/6 | 1566 | 2009 | 28 | 4 | 7 | 5.0 | 2.69 | 6.91 |
| C62H/7 | 1778 | Failed 84 Weeks | | | 0 | | 8.00 | 0.00 |
| C62H/8 | 1733 | 2315 | 34 | 4 | 7 | 4.0 | 3.44 | 5.51 |
| C62H/9 | 1972 | 2597 | 32 | 4 | 7 | 4.5 | 1.83 | 9.65 |
| C62H/10 | 1606 | 2083 | 30 | 4 | 7 | 5.0 | 3.01 | 6.12 |
| C62H/11 | 1593 | 2095 | 32 | 3 | 8 | 4.5 | 2.37 | 7.79 |
| C62H/12 | 1490 | 1982 | 33 | 4 | 7 | 4.0 | 3.22 | 6.00 |
| C62H/13 | 1745 | 2367 | 36 | 4 | 7 | 4.5 | 3.40 | 5.42 |
| C62H/14 | 1680 | 2281 | 36 | 5 | 6 | 4.5 | 2.26 | 8.24 |
| C62H/15 | 1678 | 2086 | 24 | 5 | 6 | 4.0 | 2.81 | 6.45 |
| C62H/16 | 1564 | 2018 | 29 | 5 | 7 | 4.5 | 3.13 | 6.10 |
| C62H/17 | 1759 | 2269 | 29 | 3 | 8 | 4.5 | 2.02 | 9.08 |
| C62H/18 | 1605 | 2112 | 32 | 4 | 7 | 5.0 | 2.75 | 6.70 |
| C62H/19 | 1932 | 2552 | 32 | 4 | 7 | 4.0 | 1.88 | 9.77 |
| C62H/20 | 1717 | 2251 | 31 | 4 | 7 | 4.5 | 2.15 | 8.55 |
| | | | 32 | 4.2 | 6.5 | 4.4 | 2.94 | 6.87 |

APPENDIX IIa (contd.)

INDIVIDUAL SAMPLE DETAILS AFTER 108 WEEKS EXPOSURE

| Sample No | OD Wt Calc | Weight Wet | MC % | Ratings | | | Deflect (mm) | MOE (GPa) |
|--|------------|------------|-----------|------------|------------|------------|--------------|-------------|
| | | | | Mycel | Decay | Mould | | |
| HMC/6-week predecay, Copper naphthenate treatment 1 face, 2 edges | | | | | | | | |
| C63H/1 | 1715 | 2298 | 34 | 4 | 7 | 4.5 | 1.78 | 10.25 |
| C63H/2 | 1713 | 3047 | 78 | 4 | 7 | 4.0 | 2.53 | 7.75 |
| C63H/3 | 1675 | 2222 | 33 | 4 | 8 | 5.0 | 2.11 | 8.81 |
| C63H/4 | 1685 | 2250 | 34 | 1 | 8 | 4.0 | 1.99 | 8.92 |
| C63H/5 | 1607 | 2679 | 67 | 3 | 9 | 4.0 | 2.98 | 6.34 |
| C63H/6 | 1782 | 2242 | 26 | 4 | 7 | 4.0 | 2.00 | 8.83 |
| C63H/7 | 1709 | 2240 | 31 | 2 | 8 | 4.0 | 2.38 | 7.75 |
| C63H/8 | 1781 | 2486 | 40 | 4 | 7 | 4.0 | 2.58 | 7.06 |
| C63H/9 | 1827 | 2340 | 28 | 4 | 7 | 4.5 | 1.77 | 10.28 |
| C63H/10 | 1854 | 3191 | 72 | 4 | 7 | 4.0 | 2.17 | 8.55 |
| C63H/11 | 1892 | 2475 | 31 | 3 | 8 | 4.5 | 1.87 | 9.71 |
| C63H/12 | 1513 | 2029 | 34 | 1 | 8 | 4.0 | 2.90 | 6.78 |
| C63H/13 | 1721 | 2086 | 21 | 5 | 7 | 4.0 | 4.08 | 4.69 |
| C63H/14 | 1968 | 2673 | 36 | 4 | 8 | 4.0 | 1.70 | 10.50 |
| C63H/15 | 1614 | 2440 | 51 | 3 | 8 | 4.0 | 2.35 | 8.13 |
| C63H/16 | 1736 | 2285 | 32 | 2 | 8 | 4.0 | 1.90 | 9.56 |
| C63H/17 | 1804 | 2384 | 32 | 4 | 7 | 4.5 | 1.81 | 10.30 |
| C63H/18 | 1770 | 2253 | 27 | 1 | 8 | 4.0 | 2.05 | 9.22 |
| C63H/19 | 1801 | 2341 | 30 | 4 | 7 | 3.0 | 1.99 | 9.72 |
| C63H/20 | 1598 | 2827 | 77 | 3 | 8 | 3.5 | 3.18 | 6.16 |
| | | | 41 | 3.2 | 7.6 | 4.1 | 2.31 | 8.47 |

APPENDIX IIa (contd.)

INDIVIDUAL SAMPLE DETAILS AFTER 108 WEEKS EXPOSURE

| Sample No | OD Wt Calc | Weight Wet | MC % | Ratings | | | Deflect (mm) | MOE (GPa) |
|---|------------|------------|-----------|------------|------------|------------|--------------|-------------|
| | | | | Mycel | Decay | Mould | | |
| HMC/ 6-week predecay, Copper naphthenate treatment 4 sides | | | | | | | | |
| C64H/1 | 1846 | 2607 | 41 | 1 | 8 | 4.0 | 2.02 | 9.30 |
| C64H/2 | 1688 | 2287 | 35 | 1 | 8 | 3.5 | 2.03 | 9.02 |
| C64H/3 | 1764 | 2349 | 33 | 1 | 8 | 3.0 | 2.37 | 7.65 |
| C64H/4 | 1888 | 2718 | 44 | 2 | 8 | 3.0 | 1.95 | 9.32 |
| C64H/5 | 1467 | 3027 | 106 | 1 | 8 | 3.0 | 2.48 | 7.61 |
| C64H/6 | 1911 | 2518 | 32 | 1 | 9 | 3.0 | 3.37 | 5.93 |
| C64H/7 | 1705 | 2573 | 51 | 1 | 8 | 2.5 | 2.29 | 8.10 |
| C64H/8 | 1586 | 2112 | 33 | 3 | 7 | 3.0 | 1.95 | 9.52 |
| C64H/9 | 1781 | 2341 | 31 | 1 | 8 | 3.0 | 1.70 | 10.92 |
| C64H/10 | 1932 | 2556 | 32 | 3 | 8 | 3.5 | 1.52 | 11.71 |
| C64H/11 | 1616 | 2128 | 32 | 1 | 8 | 4.0 | 3.01 | 6.40 |
| C64H/12 | 1729 | 2225 | 29 | 1 | 8 | 3.0 | 2.12 | 8.80 |
| C64H/13 | 1789 | 2947 | 65 | 1 | 8 | 3.0 | 2.05 | 9.14 |
| C64H/14 | 1736 | 2277 | 31 | 1 | 8 | 2.5 | 2.47 | 7.70 |
| C64H/15 | 1739 | 2292 | 32 | 2 | 8 | 3.0 | 2.67 | 7.10 |
| C64H/16 | 2011 | 2580 | 28 | 5 | 6 | 3.0 | 1.87 | 9.89 |
| C64H/17 | 2093 | 2678 | 28 | 4 | 7 | 3.5 | 1.60 | 11.73 |
| C64H/18 | 1428 | 1968 | 38 | 4 | 7 | 3.0 | 2.44 | 7.65 |
| C64H/19 | 1688 | 2296 | 36 | 3 | 8 | 3.5 | 2.14 | 8.62 |
| C64H/20 | 1521 | 1993 | 31 | 1 | 8 | 3.0 | 2.38 | 7.94 |
| | | | 39 | 1.9 | 7.8 | 3.2 | 2.22 | 8.70 |

APPENDIX IIa (contd.)

INDIVIDUAL SAMPLE DETAILS AFTER 108 WEEKS EXPOSURE

| Sample No | OD Wt Calc | Weight Wet | MC % | Ratings | | | Deflect (mm) | MOE (GPa) |
|---|------------|------------|-----------|------------|------------|------------|--------------|-------------|
| | | | | Mycel | Decay | Mould | | |
| HMC/ 6-week predecay, Boron treatment 1 edge | | | | | | | | |
| B61H/1 | 2012 | 2519 | 25 | 4 | 6 | 5.0 | 2.72 | 7.20 |
| B61H/2 | 1780 | 2303 | 29 | 4 | 7 | 5.0 | 1.99 | 9.39 |
| B61H/3 | 2030 | 2578 | 27 | 5 | 7 | 5.0 | 1.98 | 9.04 |
| B61H/4 | 1719 | 2284 | 33 | 3 | 7 | 5.0 | 2.15 | 8.81 |
| B61H/5 | 1923 | 2424 | 26 | 4 | 7 | 4.5 | 2.48 | 7.66 |
| B61H/6 | 1857 | 2736 | 47 | 5 | 6 | 4.5 | 2.64 | 6.86 |
| B61H/7 | 1802 | 2262 | 26 | 4 | 6 | 5.0 | 2.67 | 6.77 |
| B61H/8 | 1922 | 2584 | 34 | 1 | 8 | 5.0 | 2.25 | 8.01 |
| B61H/9 | 1675 | 2234 | 33 | 4 | 6 | 4.5 | 2.47 | 7.51 |
| B61H/10 | 1615 | 2132 | 32 | 4 | 7 | 5.0 | 2.83 | 6.61 |
| B61H/11 | 1706 | 2285 | 34 | 4 | 7 | 5.0 | 4.01 | 4.62 |
| B61H/12 | 1814 | 2433 | 34 | 5 | 6 | 5.0 | 5.62 | 3.19 |
| B61H/13 | 1686 | 2129 | 26 | 4 | 7 | 5.0 | 2.48 | 7.56 |
| B61H/14 | 1837 | 2377 | 29 | 5 | 6 | 5.0 | 2.23 | 7.93 |
| B61H/15 | 1849 | 2416 | 31 | 5 | 4 | 5.0 | 5.15 | 3.48 |
| B61H/16 | 1745 | 2285 | 31 | 4 | 7 | 4.5 | 2.78 | 6.71 |
| B61H/17 | 1624 | 2125 | 31 | 4 | 7 | 5.0 | 2.58 | 6.93 |
| B61H/18 | 1481 | 1920 | 30 | 4 | 7 | 5.0 | 3.26 | 5.59 |
| B61H/19 | 1641 | 2225 | 36 | 4 | 6 | 4.5 | 3.22 | 5.81 |
| B61H/20 | 1608 | 2100 | 31 | 4 | 6 | 5.0 | 2.98 | 6.34 |
| | | | 31 | 4.1 | 6.5 | 4.9 | 2.92 | 6.80 |

APPENDIX IIa (contd.)

INDIVIDUAL SAMPLE DETAILS AFTER 108 WEEKS EXPOSURE

| Sample No | OD Wt Calc | Weight Wet | MC % | Ratings | | | Deflect (mm) | MOE (GPa) |
|--|------------|------------|-----------|------------|------------|------------|--------------|-------------|
| | | | | Mycel | Decay | Mould | | |
| HMC/ 6-week predecay, Boron treatment 2 edges | | | | | | | | |
| B62H/1 | 2012 | 2641 | 31 | 1 | 8 | 5.0 | 1.52 | 11.91 |
| B62H/2 | 1891 | 2680 | 42 | 3 | 8 | 5.0 | 2.85 | 6.63 |
| B62H/3 | 1595 | 2135 | 34 | 1 | 8 | 5.0 | 2.07 | 9.07 |
| B62H/4 | 1550 | 2078 | 34 | 2 | 8 | 5.0 | 3.80 | 5.16 |
| B62H/5 | 1523 | 2019 | 33 | 3 | 7 | 5.0 | 2.94 | 6.33 |
| B62H/6 | 1686 | 2222 | 32 | 1 | 8 | 4.5 | 2.05 | 8.83 |
| B62H/7 | 1678 | 2217 | 32 | 1 | 8 | 4.5 | 1.93 | 9.44 |
| B62H/8 | 1718 | 2267 | 32 | 1 | 8 | 4.5 | 1.94 | 9.61 |
| B62H/9 | 1729 | 2211 | 28 | 1 | 8 | 5.0 | 3.53 | 5.30 |
| B62H/10 | 1493 | 1968 | 32 | 1 | 8 | 4.5 | 3.28 | 5.75 |
| B62H/11 | 1769 | 2252 | 27 | 1 | 8 | 4.5 | 1.63 | 11.40 |
| B62H/12 | 1583 | 2299 | 45 | 2 | 8 | 4.5 | 3.22 | 5.97 |
| B62H/13 | 1891 | 2484 | 31 | 1 | 8 | 5.0 | 1.94 | 9.17 |
| B62H/14 | 1676 | 2695 | 61 | 1 | 9 | 5.0 | 2.08 | 8.54 |
| B62H/15 | 1633 | 2144 | 31 | 1 | 8 | 4.5 | 2.40 | 7.52 |
| B62H/16 | 1722 | 2252 | 31 | 1 | 8 | 4.5 | 1.74 | 10.53 |
| B62H/17 | 1717 | 2355 | 37 | 1 | 8 | 4.5 | 1.89 | 9.54 |
| B62H/18 | 1823 | 2370 | 30 | 1 | 9 | 5.0 | 1.95 | 9.05 |
| B62H/19 | 1593 | 2149 | 35 | 1 | 8 | 4.5 | 3.08 | 6.37 |
| B62H/20 | 1739 | 2329 | 34 | 4 | 7 | 4.5 | 2.11 | 8.85 |
| | | | 35 | 1.5 | 8.0 | 4.7 | 2.40 | 8.25 |

APPENDIX IIa (contd.)

INDIVIDUAL SAMPLE DETAILS AFTER 108 WEEKS EXPOSURE

| Sample No | OD Wt Calc | Weight Wet | MC % | Ratings | | | Deflect (mm) | MOE (GPa) |
|--|------------|------------|-----------|------------|------------|------------|--------------|-------------|
| | | | | Mycel | Decay | Mould | | |
| HMC/ 6-week predecay, Boron treatment 1 face, 2 edges | | | | | | | | |
| B63H/1 | 1974 | 3099 | 57 | 3 | 7 | 4.0 | 1.72 | 10.78 |
| B63H/2 | 1746 | 2318 | 33 | 1 | 8 | 4.0 | 2.71 | 7.03 |
| B63H/3 | 1840 | 2410 | 31 | 1 | 9 | 4.0 | 1.62 | 11.05 |
| B63H/4 | 1713 | 2290 | 34 | 1 | 8 | 4.0 | 2.03 | 9.03 |
| B63H/5 | 1568 | 2142 | 37 | 1 | 8 | 4.0 | 2.73 | 7.33 |
| B63H/6 | 1888 | 2533 | 34 | 1 | 8 | 4.0 | 1.75 | 10.20 |
| B63H/7 | 1848 | 2444 | 32 | 1 | 9 | 4.0 | 1.98 | 9.05 |
| B63H/8 | 1838 | 2976 | 62 | 1 | 9 | 4.5 | 1.75 | 9.89 |
| B63H/9 | 1748 | 2631 | 51 | 1 | 8 | 4.0 | 2.91 | 6.26 |
| B63H/10 | 1538 | 2030 | 32 | 1 | 8 | 4.0 | 2.09 | 9.01 |
| B63H/11 | 1868 | 2540 | 36 | 1 | 9 | 4.0 | 2.01 | 9.28 |
| B63H/12 | 1664 | 2277 | 37 | 1 | 8 | 4.0 | 2.06 | 8.72 |
| B63H/13 | 1869 | 2472 | 32 | 1 | 8 | 4.0 | 1.72 | 10.48 |
| B63H/14 | 1867 | 2633 | 41 | 1 | 9 | 4.5 | 1.87 | 9.72 |
| B63H/15 | 1476 | 2016 | 37 | 1 | 8 | 4.5 | 2.68 | 7.14 |
| B63H/16 | 1684 | 2299 | 37 | 1 | 8 | 4.0 | 2.35 | 7.78 |
| B63H/17 | 1762 | 2392 | 36 | 1 | 8 | 4.5 | 2.24 | 8.11 |
| B63H/18 | 1734 | 2240 | 29 | 1 | 8 | 4.5 | 2.47 | 7.98 |
| B63H/19 | 1764 | 2317 | 31 | 1 | 8 | 4.5 | 1.78 | 10.05 |
| B63H/20 | 1642 | 2168 | 32 | 1 | 8 | 4.0 | 2.68 | 6.69 |
| | | | 37 | 1.1 | 8.2 | 4.2 | 2.16 | 8.78 |

APPENDIX IIa (contd.)

INDIVIDUAL SAMPLE DETAILS AFTER 108 WEEKS EXPOSURE

| Sample No | OD Wt Calc | Weight Wet | MC % | Ratings | | | Deflect (mm) | MOE (GPa) |
|--|------------|------------|-----------|------------|------------|------------|--------------|-------------|
| | | | | Mycel | Decay | Mould | | |
| HMC/ 6-week predecay, Boron treatment 4 sides | | | | | | | | |
| B64H/1 | 1668 | 2470 | 48 | 1 | 9 | 3.0 | 2.52 | 7.49 |
| B64H/2 | 1816 | 2409 | 33 | 1 | T | 3.5 | 1.94 | 9.54 |
| B64H/3 | 1642 | 2437 | 48 | 1 | 8 | 3.0 | 2.53 | 7.30 |
| B64H/4 | 1594 | 3140 | 97 | 1 | 9 | 3.0 | 1.89 | 9.84 |
| B64H/5 | 1811 | 2566 | 42 | 1 | 9 | 3.5 | 2.40 | 7.55 |
| B64H/6 | 1587 | 2367 | 49 | 1 | 8 | 3.5 | 2.20 | 8.27 |
| B64H/7 | 1772 | 3713 | 110 | 1 | 8 | 4.0 | 2.01 | 9.07 |
| B64H/8 | 1574 | 2125 | 35 | 1 | 9 | 3.0 | 2.53 | 7.60 |
| B64H/9 | 1690 | 2915 | 72 | 1 | 8 | 3.0 | 2.23 | 8.25 |
| B64H/10 | 1692 | 2409 | 42 | 1 | 8 | 4.0 | 2.27 | 8.39 |
| B64H/11 | 1835 | 2490 | 36 | 1 | 8 | 3.0 | 2.04 | 8.89 |
| B64H/12 | 1621 | 2501 | 54 | 1 | 8 | 3.5 | 2.52 | 7.25 |
| B64H/13 | 1464 | 1954 | 33 | 1 | 7 | 3.0 | 2.08 | 9.16 |
| B64H/14 | 1758 | 2266 | 29 | 1 | 9 | 3.0 | 2.28 | 8.17 |
| B64H/15 | 1839 | 2658 | 45 | 1 | 8 | 3.0 | 2.08 | 9.44 |
| B64H/16 | 1795 | 2680 | 49 | 1 | 8 | 3.0 | 2.31 | 8.13 |
| B64H/17 | 1483 | 2201 | 48 | 1 | 8 | 3.0 | 2.62 | 7.33 |
| B64H/18 | 1711 | 2250 | 32 | 1 | 4 | 3.5 | 2.07 | 9.05 |
| B64H/19 | 1761 | 2478 | 41 | 1 | 8 | 3.0 | 1.72 | 10.64 |
| B64H/20 | 1779 | 2467 | 39 | 1 | 9 | 3.0 | 2.55 | 7.56 |
| | | | 49 | 1.0 | 8.1 | 3.2 | 2.24 | 8.45 |

APPENDIX IIa (contd.)

INDIVIDUAL SAMPLE DETAILS AFTER 108 WEEKS EXPOSURE

| Sample No | OD Wt Calc | Weight Wet | MC % | Ratings | | | Deflect (mm) | MOE (GPa) |
|--|------------|------------|-----------|------------|------------|------------|--------------|-------------|
| | | | | Mycel | Decay | Mould | | |
| HMC/ 3-week predecay, Copper naphthenate treatment 1 edge | | | | | | | | |
| C31H/1 | 1624 | 2078 | 28 | 4 | 7 | 4.5 | 2.96 | 6.44 |
| C31H/2 | 1707 | 2160 | 27 | 5 | 7 | 5.0 | 2.45 | 7.80 |
| C31H/3 | 1670 | 2143 | 28 | 4 | 7 | 4.5 | 3.30 | 5.38 |
| C31H/4 | 1621 | 3302 | 104 | 5 | 6 | 4.0 | 3.13 | 5.94 |
| C31H/5 | 1862 | 2412 | 30 | 5 | 7 | 4.5 | 4.43 | 4.38 |
| C31H/6 | 1941 | 3710 | 91 | 4 | 7 | 4.5 | 2.36 | 7.59 |
| C31H/7 | 1997 | 3208 | 61 | 5 | 6 | 3.5 | 2.73 | 6.93 |
| C31H/8 | 2008 | 2542 | 27 | 2 | 9 | 4.5 | 1.97 | 9.36 |
| C31H/9 | 1761 | 2517 | 43 | 4 | 7 | 4.5 | 2.92 | 6.30 |
| C31H/10 | 2043 | 2749 | 35 | 4 | 7 | 2.5 | 1.96 | 9.31 |
| C31H/11 | 1595 | 2282 | 43 | 3 | 7 | 4.5 | 2.19 | 8.21 |
| C31H/12 | 1811 | 2557 | 41 | 4 | 7 | 4.5 | 2.62 | 7.04 |
| C31H/13 | 1769 | 3640 | 106 | 5 | 7 | 4.5 | 2.44 | 7.32 |
| C31H/14 | 1724 | 2223 | 29 | 4 | 7 | 4.0 | 2.24 | 8.29 |
| C31H/15 | 1490 | 1935 | 30 | 4 | 7 | 4.5 | 3.70 | 4.92 |
| C31H/16 | 1768 | 2341 | 32 | 5 | 7 | 4.5 | 3.04 | 6.08 |
| C31H/17 | 1691 | 2381 | 41 | 4 | 7 | 4.5 | 2.34 | 8.09 |
| C31H/18 | 1764 | 2253 | 28 | 4 | 7 | 4.5 | 2.16 | 8.44 |
| C31H/19 | 1710 | 2217 | 30 | 5 | 7 | 4.0 | 3.73 | 5.06 |
| C31H/20 | 1456 | 1997 | 37 | 5 | 4 | 4.5 | 5.97 | 3.17 |
| | | | 44 | 4.3 | 6.9 | 4.3 | 2.93 | 6.80 |

APPENDIX IIa (contd.)

INDIVIDUAL SAMPLE DETAILS AFTER 108 WEEKS EXPOSURE

| Sample No | OD Wt Calc | Weight Wet | MC % | Ratings | | | Deflect (mm) | MOE (GPa) |
|---|------------|------------------------|-----------|------------|------------|------------|--------------|-------------|
| | | | | Mycel | Decay | Mould | | |
| HMC/ 3-week predecay, Copper naphthenate treatment 2 edges | | | | | | | | |
| C32H/1 | 1553 | Failed 48 weeks | | 0 | | | 8.00 | 0.00 |
| C32H/2 | 1658 | 2175 | 31 | 5 | 7 | 4.5 | 2.58 | 7.19 |
| C32H/3 | 1665 | 2158 | 30 | 6 | 4 | 4.0 | 4.40 | 4.09 |
| C32H/4 | 1923 | 2377 | 24 | 5 | 6 | 4.5 | 3.02 | 5.98 |
| C32H/5 | 1697 | 2151 | 27 | 4 | 7 | 4.5 | 2.41 | 7.71 |
| C32H/6 | 1664 | 2129 | 28 | 5 | 6 | 4.0 | 3.44 | 5.48 |
| C32H/7 | 1697 | 2300 | 36 | 4 | 7 | 4.5 | 3.09 | 5.81 |
| C32H/8 | 1995 | 2674 | 34 | 4 | 6 | 4.5 | 3.04 | 6.07 |
| C32H/9 | 1817 | 3023 | 66 | 5 | 7 | 4.5 | 3.14 | 5.68 |
| C32H/10 | 1901 | 2515 | 32 | 3 | 8 | 3.0 | 1.88 | 9.87 |
| C32H/11 | 1795 | 2488 | 39 | 2 | 8 | 4.5 | 1.97 | 9.30 |
| C32H/12 | 1678 | 2119 | 26 | 5 | 6 | 4.0 | 3.10 | 6.13 |
| C32H/13 | 1987 | 2411 | 21 | 5 | 6 | 5.0 | 3.30 | 5.61 |
| C32H/14 | 1789 | 2369 | 32 | 5 | 7 | 4.5 | 2.33 | 7.69 |
| C32H/15 | 1796 | 2343 | 30 | 4 | 7 | 4.5 | 1.97 | 8.95 |
| C32H/16 | 1888 | 3322 | 76 | 4 | 7 | 3.5 | 2.89 | 6.42 |
| C32H/17 | 1429 | 1901 | 33 | 4 | 4 | 4.5 | 3.93 | 4.68 |
| C32H/18 | 1622 | 2006 | 24 | 5 | 6 | 3.5 | 3.05 | 6.05 |
| C32H/19 | 1983 | 2565 | 29 | 1 | 10 | 3.5 | 1.85 | 10.06 |
| C32H/20 | 1916 | 2560 | 34 | 3 | 7 | 4.0 | 1.80 | 10.55 |
| | | | 34 | 4.2 | 6.3 | 4.2 | 3.06 | 6.67 |

APPENDIX IIa (contd.)

INDIVIDUAL SAMPLE DETAILS AFTER 108 WEEKS EXPOSURE

| Sample No | OD Wt Calc | Weight Wet | MC % | Ratings | | | Deflect (mm) | MOE (GPa) |
|--|------------|------------|-----------|------------|------------|------------|--------------|-------------|
| | | | | Mycel | Decay | Mould | | |
| HMC/3-week predecay, Copper naphthenate treatment 1 face, 2 edges | | | | | | | | |
| C33H/1 | 1819 | 2284 | 26 | 5 | 7 | 4.5 | 2.86 | 6.30 |
| C33H/2 | 1673 | 2161 | 29 | 4 | 7 | 3.5 | 3.79 | 4.87 |
| C33H/3 | 1755 | 2225 | 27 | 3 | 8 | 3.5 | 2.84 | 6.54 |
| C33H/4 | 1946 | 2634 | 35 | 4 | 7 | 4.0 | 1.93 | 9.73 |
| C33H/5 | 2014 | 2779 | 38 | 4 | 7 | 3.5 | 2.10 | 8.62 |
| C33H/6 | 1799 | 2351 | 31 | 3 | 8 | 4.0 | 2.44 | 7.82 |
| C33H/7 | 1842 | 3813 | 107 | 1 | 9 | 3.0 | 2.10 | 8.46 |
| C33H/8 | 1636 | 2100 | 28 | 4 | 7 | 4.5 | 2.34 | 8.25 |
| C33H/9 | 1866 | 2348 | 26 | 4 | 8 | 4.0 | 2.74 | 7.04 |
| C33H/10 | 2091 | 2725 | 30 | 3 | 9 | 3.0 | 1.57 | 11.03 |
| C33H/11 | 1598 | 3072 | 92 | 2 | 9 | 3.0 | 2.43 | 7.43 |
| C33H/12 | 1608 | 2097 | 30 | 2 | 8 | 2.5 | 2.43 | 7.94 |
| C33H/13 | 1547 | 2230 | 44 | 3 | 7 | 4.0 | 3.73 | 5.18 |
| C33H/14 | 1623 | 2463 | 52 | 1 | 8 | 4.0 | 2.77 | 6.72 |
| C33H/15 | 1717 | 3083 | 80 | 4 | 7 | 3.5 | 2.50 | 7.44 |
| C33H/16 | 1539 | 2057 | 34 | 3 | 9 | 2.5 | 3.25 | 6.00 |
| C33H/17 | 1634 | 2143 | 31 | 1 | 9 | 4.0 | 2.19 | 8.52 |
| C33H/18 | 1748 | 2351 | 34 | 4 | 7 | 4.5 | 3.06 | 6.00 |
| C33H/19 | 1509 | 2124 | 41 | 4 | 7 | 3.0 | 3.41 | 5.67 |
| C33H/20 | 1761 | 2308 | 31 | 4 | 7 | 4.0 | 2.25 | 8.16 |
| | | | 42 | 3.2 | 7.8 | 3.6 | 2.64 | 7.39 |

APPENDIX IIa (contd.)

INDIVIDUAL SAMPLE DETAILS AFTER 108 WEEKS EXPOSURE

| Sample No | OD Wt Calc | Weight Wet | MC % | Ratings | | | Deflect (mm) | MOE (GPa) |
|---|------------|------------|-----------|------------|------------|------------|--------------|-------------|
| | | | | Mycel | Decay | Mould | | |
| HMC/ 3-week predecay, Copper naphthenate treatment 4 sides | | | | | | | | |
| C34H/1 | 1756 | 2322 | 32 | 4 | 8 | 3.5 | 2.04 | 9.02 |
| C34H/2 | 1576 | 2097 | 33 | 1 | 9 | 3.0 | 3.18 | 5.79 |
| C34H/3 | 1577 | 2680 | 70 | 5 | 6 | 3.0 | 4.44 | 4.21 |
| C34H/4 | 1737 | 2324 | 34 | 1 | 9 | 3.0 | 2.20 | 8.35 |
| C34H/5 | 1830 | 2392 | 31 | 2 | 9 | 2.5 | 2.03 | 9.05 |
| C34H/6 | 1997 | 2550 | 28 | 3 | 9 | 3.5 | 2.56 | 7.12 |
| C34H/7 | 1633 | 2427 | 49 | 5 | 6 | 3.5 | 3.00 | 6.38 |
| C34H/8 | 1684 | 2119 | 26 | 3 | 8 | 2.5 | 2.83 | 6.54 |
| C34H/9 | 1722 | 2367 | 37 | 3 | 8 | 2.5 | 2.06 | 8.89 |
| C34H/10 | 1608 | 2152 | 34 | 2 | 8 | 3.5 | 2.91 | 6.54 |
| C34H/11 | 1802 | 2373 | 32 | 1 | 9 | 2.0 | 1.97 | 9.62 |
| C34H/12 | 1557 | 2032 | 31 | 1 | T | 2.5 | 3.07 | 6.37 |
| C34H/13 | 1873 | 2460 | 31 | 3 | 8 | 3.0 | 1.95 | 9.23 |
| C34H/14 | 1489 | 2021 | 36 | 1 | 8 | 3.0 | 2.33 | 8.25 |
| C34H/15 | 1783 | 2339 | 31 | 3 | 9 | 4.0 | 2.60 | 7.07 |
| C34H/16 | 1806 | 2389 | 32 | 4 | 8 | 3.0 | 1.67 | 10.96 |
| C34H/17 | 1869 | 2400 | 28 | 3 | 7 | 3.5 | 2.08 | 9.05 |
| C34H/18 | 1737 | 2333 | 34 | 5 | 7 | 2.5 | 1.77 | 10.27 |
| C34H/19 | 1899 | 2477 | 30 | 2 | 9 | 2.5 | 1.73 | 10.50 |
| C34H/20 | 1540 | 2932 | 90 | 1 | T | 2.5 | 2.81 | 6.86 |
| | | | 37 | 2.7 | 8.3 | 2.9 | 2.46 | 8.00 |

APPENDIX IIa (contd.)

INDIVIDUAL SAMPLE DETAILS AFTER 108 WEEKS EXPOSURE

| Sample No | OD Wt Calc | Weight Wet | MC % | Ratings | | | Deflect (mm) | MOE (GPa) |
|---|------------|------------|-----------|------------|------------|------------|--------------|-------------|
| | | | | Mycel | Decay | Mould | | |
| HMC/ 3-week predecay, Boron treatment 1 edge | | | | | | | | |
| B31H/1 | 1782 | 2161 | 21 | 5 | 6 | 5.0 | 3.63 | 5.10 |
| B31H/2 | 1836 | 2344 | 28 | 4 | 6 | 5.0 | 5.02 | 3.62 |
| B31H/3 | 2053 | 2674 | 30 | 4 | 6 | 5.0 | 2.36 | 7.64 |
| B31H/4 | 1733 | 2209 | 27 | 4 | 7 | 5.0 | 3.03 | 6.51 |
| B31H/5 | 1624 | 2136 | 32 | 5 | 4 | 5.0 | 3.88 | 5.17 |
| B31H/6 | 1607 | 1988 | 24 | 5 | 6 | 5.0 | 3.63 | 5.43 |
| B31H/7 | 1556 | 1878 | 21 | 5 | 4 | 5.0 | 8.41 | 2.33 |
| B31H/8 | 1569 | 1982 | 26 | 4 | 6 | 5.0 | 4.57 | 4.21 |
| B31H/9 | 1592 | 2026 | 27 | 4 | 8 | 4.5 | 2.63 | 7.18 |
| B31H/10 | 1922 | 2525 | 31 | 4 | 7 | 5.0 | 2.39 | 7.69 |
| B31H/11 | 1676 | 2410 | 44 | 5 | 6 | 4.5 | 3.28 | 5.69 |
| B31H/12 | 1694 | 2301 | 36 | 5 | 6 | 4.5 | 6.60 | 2.76 |
| B31H/13 | 1742 | 2248 | 29 | 5 | 7 | 5.0 | 2.54 | 7.17 |
| B31H/14 | 1664 | 2095 | 26 | 5 | 6 | 4.5 | 3.45 | 5.33 |
| B31H/15 | 1735 | 2260 | 30 | 4 | 6 | 4.5 | 2.60 | 7.08 |
| B31H/16 | 1585 | 2013 | 27 | 4 | 4 | 4.5 | 4.08 | 4.80 |
| B31H/17 | 1647 | 2033 | 23 | 5 | 4 | 5.0 | 3.10 | 5.97 |
| B31H/18 | 1835 | 2439 | 33 | 4 | 7 | 5.0 | 1.94 | 9.59 |
| B31H/19 | 1697 | 2128 | 25 | 5 | 6 | 4.5 | 3.27 | 5.52 |
| B31H/20 | 1789 | 2317 | 30 | 4 | 7 | 4.5 | 2.00 | 9.33 |
| | | | 29 | 4.5 | 6.0 | 4.8 | 3.62 | 5.91 |

APPENDIX IIa (contd.)

INDIVIDUAL SAMPLE DETAILS AFTER 108 WEEKS EXPOSURE

| Sample No | OD Wt Calc | Weight Wet | MC % | Ratings | | | Deflect (mm) | MOE (GPa) |
|--|------------|------------|-----------|------------|------------|------------|--------------|-------------|
| | | | | Mycel | Decay | Mould | | |
| HMC/ 3-week predecay, Boron treatment 2 edges | | | | | | | | |
| B32H/1 | 1735 | 3047 | 76 | 1 | 9 | 5.0 | 3.41 | 5.46 |
| B32H/2 | 1761 | 2330 | 32 | 1 | 9 | 4.5 | 2.00 | 8.98 |
| B32H/3 | 1766 | 2344 | 33 | 1 | 9 | 4.5 | 1.82 | 9.95 |
| B32H/4 | 1662 | 2123 | 28 | 1 | 9 | 4.5 | 2.18 | 8.66 |
| B32H/5 | 1963 | 2770 | 41 | 1 | 9 | 4.5 | 2.02 | 8.60 |
| B32H/6 | 1760 | 2264 | 29 | 1 | T | 4.5 | 2.10 | 8.56 |
| B32H/7 | 1782 | 2330 | 31 | 1 | 9 | 4.5 | 2.11 | 8.83 |
| B32H/8 | 1742 | 2350 | 35 | 2 | 8 | 5.0 | 2.37 | 7.87 |
| B32H/9 | 1816 | 2391 | 32 | 2 | 9 | 4.5 | 1.97 | 9.23 |
| B32H/10 | 1630 | 2161 | 33 | 1 | 9 | 4.5 | 2.46 | 7.65 |
| B32H/11 | 1721 | 2344 | 36 | 3 | 7 | 5.0 | 1.85 | 10.06 |
| B32H/12 | 1997 | 2607 | 31 | 1 | 8 | 4.5 | 1.72 | 10.47 |
| B32H/13 | 1869 | 2590 | 39 | 4 | 6 | 4.5 | 2.02 | 9.12 |
| B32H/14 | 1878 | 2426 | 29 | 4 | 7 | 4.5 | 2.08 | 9.03 |
| B32H/15 | 1629 | 2377 | 46 | 1 | 9 | 4.5 | 2.34 | 7.71 |
| B32H/16 | 1457 | 1931 | 33 | 1 | 9 | 4.5 | 3.26 | 5.77 |
| B32H/17 | 1743 | 2383 | 37 | 1 | 9 | 4.5 | 3.02 | 6.20 |
| B32H/18 | 1789 | 2330 | 30 | 1 | 8 | 4.5 | 2.15 | 8.81 |
| B32H/19 | 1806 | 2424 | 34 | 1 | 9 | 5.0 | 2.35 | 8.00 |
| B32H/20 | 1495 | 1937 | 30 | 3 | 7 | 5.0 | 3.10 | 6.08 |
| | | | 36 | 1.6 | 8.5 | 4.6 | 2.32 | 8.25 |

APPENDIX IIa (contd.)

INDIVIDUAL SAMPLE DETAILS AFTER 108 WEEKS EXPOSURE

| Sample No | OD Wt Calc | Weight Wet | MC % | Ratings | | | Deflect (mm) | MOE (GPa) |
|--|------------|------------|-----------|------------|------------|------------|--------------|-------------|
| | | | | Mycel | Decay | Mould | | |
| HMC/ 3-week predecay, Boron treatment 1 face, 2 edges | | | | | | | | |
| B33H/1 | 1599 | 2247 | 41 | 1 | 9 | 4.5 | 2.56 | 7.09 |
| B33H/2 | 1843 | 2442 | 33 | 1 | 10 | 4.0 | 1.68 | 10.78 |
| B33H/3 | 1561 | 2067 | 32 | 1 | T | 3.5 | 3.61 | 5.03 |
| B33H/4 | 1813 | 2381 | 31 | 1 | 9 | 4.5 | 2.09 | 8.80 |
| B33H/5 | 1845 | 2418 | 31 | 1 | 9 | 4.5 | 3.21 | 5.94 |
| B33H/6 | 1781 | 2420 | 36 | 1 | 8 | 4.5 | 2.54 | 7.57 |
| B33H/7 | 1695 | 2262 | 33 | 1 | 9 | 4.5 | 2.00 | 9.27 |
| B33H/8 | 1816 | 2511 | 38 | 1 | 9 | 4.0 | 2.59 | 7.14 |
| B33H/9 | 1793 | 2372 | 32 | 1 | 9 | 4.5 | 1.89 | 9.79 |
| B33H/10 | 1615 | 2189 | 36 | 1 | 9 | 4.0 | 2.25 | 8.05 |
| B33H/11 | 1644 | 2090 | 27 | 1 | 10 | 3.5 | 2.81 | 6.72 |
| B33H/12 | 1861 | 2656 | 43 | 1 | 9 | 4.5 | 2.04 | 9.19 |
| B33H/13 | 1703 | 2259 | 33 | 1 | 9 | 4.0 | 2.07 | 8.79 |
| B33H/14 | 1837 | 2444 | 33 | 1 | 10 | 4.0 | 1.55 | 11.54 |
| B33H/15 | 1964 | 3245 | 65 | 1 | 9 | 4.0 | 1.94 | 9.22 |
| B33H/16 | 1630 | 2240 | 37 | 1 | 8 | 4.0 | 2.86 | 6.55 |
| B33H/17 | 1809 | 3284 | 82 | 1 | 9 | 4.0 | 2.10 | 8.91 |
| B33H/18 | 1744 | 2320 | 33 | 1 | 9 | 3.5 | 1.75 | 10.37 |
| B33H/19 | 1685 | 2305 | 37 | 1 | 9 | 4.5 | 2.21 | 8.32 |
| B33H/20 | 1546 | 2098 | 36 | 1 | 10 | 4.5 | 2.71 | 7.15 |
| | | | 38 | 1.0 | 9.2 | 4.2 | 2.32 | 8.31 |

APPENDIX IIa (contd.)

INDIVIDUAL SAMPLE DETAILS AFTER 108 WEEKS EXPOSURE

| Sample No | OD Wt Calc | Weight Wet | MC % | Ratings | | | Deflect (mm) | MOE (GPa) |
|--|------------|------------|-----------|------------|------------|------------|--------------|-------------|
| | | | | Mycel | Decay | Mould | | |
| HMC/ 3-week predecay, Boron treatment 4 sides | | | | | | | | |
| B34H/1 | 1623 | 2326 | 43 | 1 | 9 | 3.0 | 2.90 | 6.68 |
| B34H/2 | 1871 | 3114 | 66 | 1 | 9 | 4.0 | 1.57 | 11.54 |
| B34H/3 | 1469 | 1962 | 34 | 1 | 9 | 3.0 | 2.27 | 8.36 |
| B34H/4 | 1936 | 2490 | 29 | 1 | T | 4.0 | 3.09 | 6.48 |
| B34H/5 | 1809 | 2457 | 36 | 1 | 9 | 3.0 | 2.17 | 8.56 |
| B34H/6 | 1471 | 1900 | 29 | 1 | 9 | 2.5 | 2.81 | 7.00 |
| B34H/7 | 1791 | 2407 | 34 | 1 | 8 | 4.0 | 1.70 | 10.74 |
| B34H/8 | 1793 | 2414 | 35 | 1 | 9 | 4.0 | 2.04 | 8.84 |
| B34H/9 | 1816 | 2380 | 31 | 1 | 10 | 2.5 | 1.92 | 9.65 |
| B34H/10 | 1758 | 2446 | 39 | 1 | 9 | 3.0 | 1.69 | 10.77 |
| B34H/11 | 1822 | 2523 | 38 | 1 | 9 | 3.5 | 1.76 | 10.22 |
| B34H/12 | 1666 | 2386 | 43 | 1 | 9 | 3.0 | 2.21 | 8.52 |
| B34H/13 | 1671 | 2405 | 44 | 1 | 8 | 3.5 | 1.89 | 9.93 |
| B34H/14 | 1492 | 1962 | 32 | 1 | 9 | 3.5 | 2.93 | 6.66 |
| B34H/15 | 1868 | 3843 | 106 | 1 | 9 | 3.0 | 1.85 | 9.89 |
| B34H/16 | 1804 | 2542 | 41 | 1 | 9 | 3.0 | 2.04 | 8.97 |
| B34H/17 | 2125 | 2975 | 40 | 1 | 8 | 3.5 | 1.80 | 10.01 |
| B34H/18 | 1621 | 2157 | 33 | 1 | 9 | 3.0 | 2.01 | 9.59 |
| B34H/19 | 1635 | 2341 | 43 | 1 | 9 | 3.5 | 2.72 | 6.96 |
| B34H/20 | 1737 | 2420 | 39 | 1 | 9 | 4.0 | 2.49 | 7.89 |
| | | | 42 | 1.0 | 8.9 | 3.3 | 2.19 | 8.86 |

APPENDIX IIa (contd.)

INDIVIDUAL SAMPLE DETAILS AFTER 108 WEEKS EXPOSURE

| Sample No | OD Wt Calc | Weight Wet | MC % | Ratings | | | Deflect (mm) | MOE (GPa) |
|---|------------|------------|-----------|------------|-------------|------------|--------------|-------------|
| | | | | Mycel | Decay | Mould | | |
| HMC/ 3-week predecay, H1.2 Boron treatment | | | | | | | | |
| B3H/1 | 1481 | 1982 | 34 | 1 | 10 | 2.0 | 3.12 | 5.98 |
| B3H/2 | 1507 | 2418 | 60 | 1 | 10 | 2.0 | 4.93 | 3.74 |
| B3H/3 | 1263 | 1809 | 43 | 1 | 10 | 2.5 | 5.18 | 3.82 |
| B3H/4 | 1356 | 2247 | 66 | 1 | 10 | 2.0 | 3.54 | 5.54 |
| B3H/5 | 1344 | 1948 | 45 | 1 | 10 | 2.0 | 3.21 | 5.97 |
| B3H/6 | 1511 | 3732 | 147 | 1 | 10 | 2.0 | 4.10 | 4.58 |
| B3H/7 | 1504 | 2020 | 34 | 1 | 10 | 2.5 | 3.90 | 4.85 |
| B3H/8 | 1554 | 2257 | 45 | 1 | 10 | 2.0 | 3.61 | 5.28 |
| B3H/9 | 1514 | 2199 | 45 | 1 | 10 | 2.0 | 3.75 | 4.94 |
| B3H/10 | 1533 | 2174 | 42 | 1 | 10 | 2.5 | 5.45 | 3.28 |
| B3H/11 | 1537 | 2222 | 45 | 1 | 10 | 2.5 | 4.01 | 4.62 |
| B3H/12 | 1404 | 1856 | 32 | 1 | 10 | 2.5 | 3.33 | 5.73 |
| B3H/13 | 1546 | 2178 | 41 | 1 | 10 | 2.0 | 6.18 | 3.15 |
| B3H/14 | 1468 | 2391 | 63 | 1 | 10 | 2.0 | 2.88 | 6.72 |
| B3H/15 | 1617 | 2217 | 37 | 1 | 10 | 2.0 | 3.22 | 5.94 |
| B3H/16 | 1404 | 2074 | 48 | 1 | 10 | 2.5 | 2.90 | 6.50 |
| B3H/17 | 1493 | 2423 | 62 | 1 | 10 | 3.0 | 3.06 | 6.30 |
| B3H/18 | 1262 | 2039 | 62 | 1 | 10 | 2.5 | 4.02 | 4.55 |
| B3H/19 | 1411 | 2038 | 44 | 1 | 10 | 3.0 | 3.38 | 5.76 |
| B3H/20 | 1351 | 1854 | 37 | 1 | 10 | 3.0 | 3.81 | 5.19 |
| | | | 52 | 1.0 | 10.0 | 2.3 | 3.88 | 5.12 |

APPENDIX IIa (contd.)

INDIVIDUAL SAMPLE DETAILS AFTER 108 WEEKS EXPOSURE

| Sample No | OD Wt Calc | Weight Wet | MC % | Ratings | | | Deflect (mm) | MOE (GPa) |
|---|------------|-------------------------|-----------|------------|------------|------------|--------------|-------------|
| | | | | Mycel | Decay | Mould | | |
| HMC/ 3-week predecay, Untreated Controls | | | | | | | | |
| U3H/1 | 1775 | 2162 | 22 | 5 | 4 | 5.0 | 3.35 | 5.45 |
| U3H/2 | 2026 | 2366 | 17 | 5 | 6 | 5.0 | 3.29 | 5.56 |
| U3H/3 | 1579 | 2036 | 29 | 4 | 7 | 4.0 | 2.93 | 6.50 |
| U3H/4 | 1875 | 2586 | 38 | 5 | 7 | 3.0 | 2.01 | 9.10 |
| U3H/5 | 1545 | Failed 108 Weeks | | | 0 | | 8.00 | 0.00 |
| U3H/6 | 1695 | 2114 | 25 | 4 | 7 | 5.0 | 3.29 | 5.65 |
| U3H/7 | 1821 | 2403 | 32 | 3 | 9 | 4.5 | 2.00 | 9.50 |
| U3H/8 | 1650 | 2241 | 36 | 5 | 6 | 4.0 | 4.43 | 4.29 |
| U3H/9 | 1662 | Failed 108 Weeks | | | 0 | | 8.00 | 0.00 |
| U3H/10 | 1985 | Failed 84 Weeks | | | 0 | | 8.00 | 0.00 |
| U3H/11 | 1774 | 2210 | 25 | 4 | 7 | 4.5 | 5.38 | 3.67 |
| U3H/12 | 1830 | 3231 | 77 | 5 | 6 | 3.5 | 2.44 | 7.75 |
| U3H/13 | 1813 | Failed 108 Weeks | | | 0 | | 8.00 | 0.00 |
| U3H/14 | 1727 | 2153 | 25 | 4 | 7 | 4.5 | 1.99 | 9.43 |
| U3H/15 | 1624 | 2088 | 29 | 4 | 7 | 4.0 | 2.60 | 6.96 |
| U3H/16 | 2038 | 2497 | 23 | 5 | 6 | 5.0 | 3.45 | 5.46 |
| U3H/17 | 1907 | 2485 | 30 | 5 | 6 | 4.5 | 2.45 | 7.65 |
| U3H/18 | 1472 | 1950 | 32 | 5 | 6 | 4.0 | 3.49 | 5.43 |
| U3H/19 | 1600 | 1925 | 20 | 5 | 4 | 5.0 | 4.10 | 4.59 |
| U3H/20 | 1490 | 1992 | 34 | 4 | 6 | 4.5 | 2.95 | 6.04 |
| | | | 31 | 4.5 | 5.1 | 4.4 | 4.11 | 5.15 |

APPENDIX IIa (contd.)

INDIVIDUAL SAMPLE DETAILS AFTER 108 WEEKS EXPOSURE

| Sample No | OD Wt Calc | Weight Wet | MC % | Ratings | | | Deflect (mm) | MOE (GPa) |
|---|------------|------------|-----------|------------|------------|------------|--------------|-------------|
| | | | | Mycel | Decay | Mould | | |
| HMC/No predecay, Moisture Content Untreated Controls | | | | | | | | |
| UMH/1 | 1738 | 2296 | 32 | 1 | 10 | 4.5 | 2.70 | 7.06 |
| UMH/2 | 1806 | 2335 | 29 | 2 | 9 | 5.0 | 1.90 | 9.72 |
| UMH/3 | 1906 | 2535 | 33 | 2 | 9 | 5.0 | 1.67 | 10.59 |
| UMH/4 | 1653 | 2191 | 33 | 2 | T | 5.0 | 2.17 | 8.30 |
| UMH/5 | 1660 | 2352 | 42 | 3 | 8 | 4.0 | 2.48 | 7.59 |
| UMH/6 | 1724 | 2265 | 31 | 2 | 9 | 5.0 | 3.24 | 5.85 |
| UMH/7 | 1940 | 2426 | 25 | 5 | 7 | 5.0 | 2.28 | 7.92 |
| UMH/8 | 1635 | 2164 | 32 | 3 | 8 | 5.0 | 3.36 | 5.67 |
| UMH/9 | 1932 | 2547 | 32 | 2 | 9 | 5.0 | 2.04 | 8.84 |
| UMH/10 | 1887 | 2518 | 33 | 1 | 10 | 3.5 | 1.75 | 10.57 |
| UMH/11 | 1558 | 2139 | 37 | 2 | 9 | 4.5 | 3.06 | 6.49 |
| UMH/12 | 1581 | 2363 | 49 | 1 | 10 | 4.5 | 2.44 | 7.68 |
| UMH/13 | 1683 | 2203 | 31 | 2 | 9 | 5.0 | 3.01 | 6.27 |
| UMH/14 | 1849 | 2397 | 30 | 1 | 10 | 4.0 | 1.81 | 9.99 |
| UMH/15 | 1594 | 2246 | 41 | 3 | 8 | 4.5 | 2.68 | 6.93 |
| UMH/16 | 2019 | 2666 | 32 | 3 | 8 | 4.5 | 1.67 | 10.87 |
| UMH/17 | 1752 | 2294 | 31 | 3 | 8 | 5.0 | 2.61 | 7.08 |
| UMH/18 | 1889 | 3367 | 78 | 3 | 8 | 4.5 | 1.99 | 9.26 |
| UMH/19 | 1963 | 3088 | 57 | 5 | 4 | 5.0 | 3.03 | 5.72 |
| UMH/20 | 1936 | 2575 | 33 | 1 | 10 | 3.0 | 1.94 | 9.52 |
| | | | 37 | 2.4 | 8.5 | 4.6 | 2.39 | 8.10 |

APPENDIX IIb (contd.)

INDIVIDUAL SAMPLE DETAILS AFTER 107 WEEKS EXPOSURE

| Sample No | OD Wt Calc | Weight Wet | MC % | Ratings | | | Deflect (mm) | MOE (GPa) |
|---|------------|------------------------|-----------|------------|------------|------------|--------------|-------------|
| | | | | Mycel | Decay | Mould | | |
| LMC/6 weeks predecay, Copper naphthenate treated 2 edges | | | | | | | | |
| C62L/1 | 1741 | 2030 | 17 | 4 | 6 | 5 | 2.47 | 7.66 |
| C62L/2 | 1568 | 1926 | 23 | 4 | 7 | 4 | 2.65 | 7.19 |
| C62L/3 | 1865 | 2286 | 23 | 3 | 7 | 4.5 | 1.82 | 10.51 |
| C62L/4 | 1693 | 1940 | 15 | 5 | 4 | 5 | 3.61 | 5.32 |
| C62L/5 | 1845 | 2155 | 17 | 5 | 7 | 4.5 | 3.45 | 5.50 |
| C62L/6 | 1601 | Failed 40 Weeks | | | 0 | | 8.00 | 0 |
| C62L/7 | 1552 | Failed 84 Weeks | | | 0 | | 8.00 | 0 |
| C62L/8 | 1760 | 2134 | 21 | 4 | 7 | 4.5 | 1.93 | 9.92 |
| C62L/9 | 1691 | 2120 | 25 | 3 | 8 | 5 | 2.62 | 7.46 |
| C62L/10 | 1419 | 1766 | 24 | 2 | 8 | 4.5 | 2.91 | 6.74 |
| | | | 21 | 3.8 | 5.4 | 4.6 | 3.75 | 6.03 |
| LMC/6 weeks predecay, Copper naphthenate treated 4 sides | | | | | | | | |
| C64L/1 | 1645 | 2134 | 30 | 3 | 7 | 4 | 3.01 | 5.99 |
| C64L/2 | 1861 | 2330 | 25 | 1 | 7 | 4.5 | 1.87 | 10.18 |
| C64L/3 | 1740 | 2196 | 26 | 1 | 7 | 4 | 1.85 | 10.10 |
| C64L/4 | 1898 | 2223 | 17 | 3 | 7 | 4.5 | 1.58 | 12.03 |
| C64L/5 | 1937 | 2318 | 20 | 1 | 7 | 4 | 1.89 | 9.98 |
| C64L/6 | 1728 | 2006 | 16 | 1 | 7 | 4.5 | 2.32 | 8.17 |
| C64L/7 | 1622 | 1964 | 21 | 3 | 8 | 4.5 | 4.79 | 3.91 |
| C64L/8 | 1689 | 2046 | 21 | 1 | 7 | 4.5 | 3.12 | 6.29 |
| C64L/9 | 1692 | 2139 | 26 | 1 | 8 | 4 | 1.89 | 9.94 |
| C64L/10 | 1699 | 2118 | 25 | 1 | 8 | 4.5 | 2.90 | 6.69 |
| | | | 23 | 1.6 | 7.3 | 4.3 | 2.52 | 8.33 |
| LMC/6 weeks predecay, Boron treated 2 edges | | | | | | | | |
| B62L/1 | 1640 | 2062 | 26 | 1 | 8 | 4.5 | 1.79 | 10.71 |
| B62L/2 | 1975 | 2459 | 25 | 3 | 8 | 4 | 1.65 | 11.20 |
| B62L/3 | 1892 | 2276 | 20 | 4 | 7 | 4.5 | 1.43 | 12.91 |
| B62L/4 | 1768 | 2225 | 26 | 1 | 8 | 4 | 2.01 | 9.51 |
| B62L/5 | 1907 | 2391 | 25 | 3 | 8 | 4 | 1.77 | 10.78 |
| B62L/6 | 1630 | 2099 | 29 | 4 | 7 | 5 | 3.28 | 5.57 |
| B62L/7 | 1661 | 2090 | 26 | 3 | 7 | 4 | 2.96 | 6.33 |
| B62L/8 | 1763 | 2224 | 26 | 2 | 8 | 4 | 1.92 | 9.88 |
| B62L/9 | 1718 | 2179 | 27 | 3 | 8 | 5 | 2.84 | 6.70 |
| B62L/10 | 1739 | 2086 | 20 | 4 | 6 | 4.5 | 6.40 | 3.11 |
| | | | 25 | 2.8 | 7.5 | 4.4 | 2.61 | 8.67 |

APPENDIX IIb (contd.)

INDIVIDUAL SAMPLE DETAILS AFTER 107 WEEKS EXPOSURE

| Sample No | OD Wt Calc | Weight Wet | MC % | Ratings | | | Deflect (mm) | MOE (GPa) |
|---|------------|------------|-----------|------------|------------|------------|--------------|-------------|
| | | | | Mycel | Decay | Mould | | |
| LMC/6 weeks predecay, Boron treated 4 sides | | | | | | | | |
| B64L/1 | 1798 | 2302 | 28 | 1 | 8 | 2 | 1.65 | 11.47 |
| B64L/2 | 1637 | 2088 | 28 | 1 | 8 | 2 | 2.50 | 7.70 |
| B64L/3 | 1758 | 2238 | 27 | 1 | 8 | 2 | 1.92 | 9.45 |
| B64L/4 | 1573 | 2064 | 31 | 1 | 8 | 2 | 2.40 | 8.02 |
| B64L/5 | 1715 | 2366 | 38 | 1 | 8 | 2 | 2.40 | 7.79 |
| B64L/6 | 1681 | 2142 | 27 | 1 | 8 | 2 | 1.93 | 9.64 |
| B64L/7 | 1612 | 2101 | 30 | 1 | 8 | 2 | 3.60 | 5.09 |
| B64L/8 | 1811 | 2576 | 42 | 1 | 8 | 4 | 2.76 | 7.09 |
| B64L/9 | 1709 | 2163 | 27 | 1 | 8 | 2 | 1.80 | 10.39 |
| B64L/10 | 1837 | 2373 | 29 | 1 | 8 | 2.5 | 2.89 | 6.40 |
| | | | 31 | 1.0 | 8.0 | 2.3 | 2.39 | 8.30 |
| LMC/3 weeks predecay, Copper naphthenate treated 2 edges | | | | | | | | |
| C32L/1 | 1589 | 2037 | 28 | 1 | T | 4 | 2.39 | 7.60 |
| C32L/2 | 1884 | 2227 | 18 | 4 | 7 | 4.5 | 2.75 | 6.73 |
| C32L/3 | 1663 | 1862 | 12 | 5 | 4 | 4.5 | 8.10 | 2.47 |
| C32L/4 | 1684 | 2102 | 25 | 1 | 9 | 4.5 | 2.10 | 9.06 |
| C32L/5 | 1825 | 2118 | 16 | 5 | 6 | 5 | 2.96 | 6.48 |
| C32L/6 | 1879 | 2232 | 19 | 4 | 7 | 5 | 2.43 | 7.71 |
| C32L/7 | 1518 | 1926 | 27 | 1 | 7 | 4.5 | 2.69 | 7.39 |
| C32L/8 | 1584 | 1935 | 22 | 4 | 6 | 5 | 2.34 | 8.01 |
| C32L/9 | 1728 | 2160 | 25 | 1 | 9 | 4.5 | 2.53 | 7.58 |
| C32L/10 | 1986 | 2465 | 24 | 3 | 8 | 5 | 3.16 | 6.31 |
| | | | 22 | 2.9 | 7.3 | 4.7 | 3.15 | 6.93 |
| LMC/3 weeks predecay, Copper naphthenate treated 4 sides | | | | | | | | |
| C34L/1 | 1753 | 2203 | 26 | 1 | 8 | 3.5 | 1.89 | 9.95 |
| C34L/2 | 1843 | 2311 | 25 | 1 | 8 | 4.5 | 1.73 | 10.83 |
| C34L/3 | 1605 | 2071 | 29 | 1 | 9 | 5 | 2.42 | 7.87 |
| C34L/4 | 1959 | 2179 | 11 | 2 | 7 | 4.5 | 2.25 | 8.19 |
| C34L/5 | 1789 | 2273 | 27 | 1 | 8 | 3 | 1.91 | 9.72 |
| C34L/6 | 1810 | 2298 | 27 | 1 | 8 | 4 | 2.85 | 6.69 |
| C34L/7 | 1725 | 2188 | 27 | 1 | 8 | 4 | 1.94 | 9.75 |
| C34L/8 | 1838 | 2403 | 31 | 1 | 8 | 4.5 | 2.08 | 9.02 |
| C34L/9 | 1662 | 2079 | 25 | 1 | 8 | 3 | 2.86 | 6.95 |
| C34L/10 | 1579 | 1985 | 26 | 1 | 8 | 4.5 | 2.19 | 8.91 |
| | | | 25 | 1.1 | 8.0 | 4.0 | 2.21 | 8.79 |

APPENDIX IIb (contd.)

INDIVIDUAL SAMPLE DETAILS AFTER 107 WEEKS EXPOSURE

| Sample No | OD Wt Calc | Weight Wet | MC % | Ratings | | | Deflect (mm) | MOE (GPa) |
|--|------------|------------|-----------|------------|-------------|------------|--------------|-------------|
| | | | | Mycel | Decay | Mould | | |
| LMC/3 weeks predecay, Boron treated 2 edges | | | | | | | | |
| B32L/1 | 1750 | 2255 | 29 | 1 | 8 | 4 | 2.16 | 8.64 |
| B32L/2 | 1862 | 2321 | 25 | 3 | 7 | 4.5 | 1.76 | 10.65 |
| B32L/3 | 1685 | 2142 | 27 | 1 | 9 | 4.5 | 2.62 | 7.21 |
| B32L/4 | 1765 | 2216 | 26 | 1 | 8 | 4 | 1.75 | 10.62 |
| B32L/5 | 1687 | 2135 | 27 | 1 | 9 | 4 | 2.04 | 9.26 |
| B32L/6 | 1973 | 2521 | 28 | 1 | 8 | 4.5 | 1.62 | 11.39 |
| B32L/7 | 1702 | 2150 | 26 | 1 | 9 | 4 | 3.06 | 6.28 |
| B32L/8 | 1636 | 2067 | 26 | 1 | 9 | 3 | 2.59 | 7.35 |
| B32L/9 | 1729 | 2336 | 35 | 3 | 7 | 5 | 2.41 | 7.66 |
| B32L/10 | 2037 | 2563 | 26 | 3 | 7 | 4 | 1.81 | 10.31 |
| | | | 27 | 1.6 | 8.1 | 4.1 | 2.18 | 8.94 |
| LMC/3 weeks predecay, Boron treated 4 sides | | | | | | | | |
| B34L/1 | 1799 | 2480 | 38 | 1 | 9 | 2 | 1.77 | 10.69 |
| B34L/2 | 1738 | 2183 | 26 | 1 | 8 | 2 | 2.54 | 7.64 |
| B34L/3 | 1569 | 2128 | 36 | 1 | 9 | 2.5 | 2.47 | 7.55 |
| B34L/4 | 1556 | 2004 | 29 | 1 | 8 | 2 | 2.20 | 8.51 |
| B34L/5 | 1699 | 2153 | 27 | 1 | 9 | 3 | 2.10 | 9.13 |
| B34L/6 | 1705 | 2159 | 27 | 1 | 8 | 2 | 2.69 | 7.26 |
| B34L/7 | 1329 | 2009 | 51 | 1 | 8 | 2 | 3.31 | 5.93 |
| B34L/8 | 1755 | 2244 | 28 | 1 | 9 | 2 | 2.54 | 7.48 |
| B34L/9 | 1630 | 2054 | 26 | 1 | 8 | 2 | 2.14 | 9.02 |
| B34L/10 | 1794 | 2340 | 30 | 1 | 8 | 2 | 2.11 | 8.97 |
| | | | 32 | 1.0 | 8.4 | 2.2 | 2.39 | 8.22 |
| LMC/3 weeks predecay, H 1.2 Boron treated | | | | | | | | |
| B3L/1 | 1500 | 1935 | 29 | 1 | 10 | 2 | 3.92 | 4.94 |
| B3L/2 | 1463 | 2058 | 41 | 1 | 10 | 2 | 3.96 | 4.87 |
| B3L/3 | 1490 | 1920 | 29 | 1 | 10 | 2 | 2.57 | 7.64 |
| B3L/4 | 1497 | 1888 | 26 | 1 | 10 | 2 | 3.67 | 5.35 |
| B3L/5 | 1407 | 1810 | 29 | 1 | 10 | 2 | 3.13 | 6.30 |
| B3L/6 | 1424 | 1896 | 33 | 1 | 10 | 2 | 3.21 | 6.11 |
| B3L/7 | 1299 | 1675 | 29 | 1 | 10 | 2 | 4.25 | 4.60 |
| B3L/8 | 1429 | 1816 | 27 | 1 | 10 | 2 | 3.62 | 5.26 |
| B3L/9 | 1351 | 1726 | 28 | 1 | 10 | 2.5 | 3.43 | 5.54 |
| B3L/10 | 1478 | 2439 | 65 | 1 | 10 | 3 | 6.66 | 2.79 |
| | | | 34 | 1.0 | 10.0 | 2.2 | 3.84 | 5.34 |

APPENDIX IIb (contd.)

INDIVIDUAL SAMPLE DETAILS AFTER 107 WEEKS EXPOSURE

| Sample No | OD Wt Calc | Weight Wet | MC % | Ratings | | | Deflect (mm) | MOE (GPa) |
|---|------------|-------------------------|-----------|------------|------------|------------|--------------|-------------|
| | | | | Mycel | Decay | Mould | | |
| LMC/3 weeks predecay, Untreated Controls | | | | | | | | |
| U3L/1 | 1656 | 2092 | 26 | 3 | 8 | 4 | 1.75 | 10.58 |
| U3L/2 | 1689 | 2042 | 21 | 5 | 4 | 5 | 2.61 | 7.10 |
| U3L/3 | 1775 | 2191 | 23 | 1 | 9 | 4.5 | 1.69 | 11.16 |
| U3L/4 | 1553 | Failed 107 Weeks | | | 0 | | 8.00 | 0 |
| U3L/5 | 1770 | Failed 56 Weeks | | | 0 | | 8.00 | 0 |
| U3L/6 | 1729 | 2064 | 19 | 4 | 7 | 5 | 4.60 | 4.17 |
| U3L/7 | 1524 | Failed 56 Weeks | | | 0 | | 10.00 | 0 |
| U3L/8 | 1637 | 1977 | 21 | 4 | 7 | 4.5 | 2.54 | 7.27 |
| U3L/9 | 1779 | 2109 | 19 | 4 | 7 | 4.5 | 2.68 | 7.08 |
| U3L/10 | 1588 | 1953 | 23 | 3 | 8 | 4.5 | 2.19 | 8.79 |
| | | | 22 | 3.4 | 5.0 | 4.6 | 4.41 | 5.61 |
| LMC/No predecay, Moisture Content Untreated Controls | | | | | | | | |
| UML/1 | 1729 | Failed 84 Weeks | | | 0 | | 8.00 | 0 |
| UML/2 | 1614 | 2005 | 24 | 1 | 10 | 4 | 2.68 | 7.54 |
| UML/3 | 1570 | 2060 | 31 | 1 | T | 4.5 | 2.43 | 7.96 |
| UML/4 | 1911 | 2235 | 17 | 4 | 7 | 4.5 | 3.05 | 6.37 |
| UML/5 | 1679 | 2106 | 25 | 3 | 8 | 4.5 | 2.17 | 8.64 |
| UML/6 | 1716 | 2164 | 26 | 1 | 10 | 4.5 | 2.40 | 7.99 |
| UML/7 | 1464 | 1818 | 24 | 4 | 6 | 4 | 2.89 | 6.58 |
| UML/8 | 2099 | 2680 | 28 | 1 | 10 | 4.5 | 1.71 | 10.46 |
| UML/9 | 1738 | 2205 | 27 | 1 | 10 | 4.5 | 2.19 | 8.69 |
| UML/10 | 1688 | 2114 | 25 | 1 | 10 | 4 | 2.37 | 8.01 |
| | | | 25 | 1.9 | 8.1 | 4.3 | 2.99 | 7.22 |