

Technical Data

Section Nine

Borate Penetration Testing

**Determination of Elemental Boron in Surface Shavings of BluWood Treated
Lumber**

Final Report
To

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Introduction

The retention of boron in wood is critical to provide satisfactory resistance to fungi and insect attack of borate-treated wood. The American Wood Protection Association (AWPA) stipulates that for good protection of borate treated wood, the retention should be 0.17 pcf B_2O_3 for non-Formosan termite areas. This value is equal to 0.3043 BAE, 0.25 DOT, 0.0527 pcf of boron, or 1650 ppm of boron. In Formosan areas, the necessary loading level of borate treated wood is 0.28 17 pcf B_2O_3 . This value is equal to 0.5012 BAE, 0.4172 DOT, 0.087 pcf of B, or 2712 ppm of boron. Is also known as anhydrous boric acid or boric oxide and should not be confused with boric acid equivalent (BAE). B_2O_3 is the most common method of reporting boron values for borate treated wood.

The objective of this study was to determine the retention of boron in the shavings of BluWood treated lumber.

Materials and Methods

Southern yellow pine lumber was treated by WoodSmart Solutions (WSS). The treated lumber was placed in a vice on a Bridgeport vertical milling machine and WSS personnel milled off the top 0.050" of the workpiece until a suitable amount of shaving had accumulated. The shavings were collected and shipped to Dr. Shupe for analysis. The samples were further reduced in a Wiley mill to small particles. The particles were then tested for elemental boron by inductively coupled spectrometry (ICP). Two samples were selected for testing.

Results

Sample 1 and 2 yielded boron values of 3236 ppm and 3316 ppm, respectively. The average value was 3276 ppm, which is equal to 0.1048 pcf of B, or 0.3370 B_2O_3 . This value satisfies the AWPA requirement for wood protection in both Formosan infested areas and areas not infested with the Formosan termite.

Conclusions

Based on this test, WSS treated wood offers satisfactory protection against fungi and insect attack in both Formosan infested areas and areas not infested with the Formosan termite.