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Pengaruh Jenis Bahan Finishing berbasis Natural Resin dan Metode Aplikasi terhadap Kualitas Finishing Papan Laminasi Bambu Betung (Dendrocalamus asper)
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PENGARUH JENIS BAHAN *FINISHING* BERBASIS *NATURAL RESIN* DAN METODE APLIKASI TERHADAP KUALITAS *FINISHING* PAPAN LAMINASI BAMBU BETUNG (*Dendrocalamus asper*)

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INTISARI

Papan laminasi bambu betung (*Dendrocalamus asper*) merupakan salah satu produk rekayasa yang berpotensi menggantikan kayu pada industri furnitur dan konstruksi. Namun, sifat higroskopis serta karakteristik permukaannya menyebabkan material ini memerlukan perlakuan *finishing* untuk meningkatkan kualitas permukaan dan daya tahannya. Penelitian ini bertujuan mengevaluasi pengaruh jenis bahan *finishing* berbasis *natural resin* dan metode aplikasi terhadap sifat fisik, karakteristik permukaan, serta kualitas lapisan *finishing* pada papan laminasi bambu betung.

Penelitian menggunakan rancangan acak lengkap faktorial dengan dua faktor, yaitu jenis *natural resin* (damar mata kucing, gondorukem, dan kemenyan) serta metode aplikasi (kuas dan *spray*), dengan lima ulangan pada setiap kombinasi perlakuan. Parameter yang diamati meliputi kerapatan, kadar air, daya serap air dan pengembangan tebal (JIS 243 2003), kekasaran permukaan (ISO 4287:1997), kekerasan (ASTM E10), daya lekat (ASTM D4541-22), sudut kontak (*contact angle*), serta nilai K. Data penelitian dianalisis menggunakan analisis ragam diteruskan dengan uji HSD untuk faktor yang berbeda nyata.

Hasil penelitian menunjukkan bahwa aplikasi *natural resin* mampu meningkatkan sifat fisik dan kualitas *finishing* papan laminasi bambu betung. Perlakuan menghasilkan peningkatan sudut kontak, daya lekat, dan kekerasan lapisan *finishing*, serta menurunkan kadar air, daya serap air, pengembangan tebal, kekasaran permukaan, dan nilai K dibandingkan kontrol. Secara umum, metode aplikasi *spray* menghasilkan karakteristik permukaan yang lebih baik dibandingkan metode kuas, terutama ditunjukkan oleh nilai daya lekat dan sudut kontak yang lebih tinggi, serta nilai K yang lebih rendah. Peningkatan sudut kontak yang diikuti penurunan nilai K mengindikasikan bahwa permukaan papan laminasi menjadi lebih hidrofobik setelah aplikasi *natural resin*. Kombinasi resin gondorukem dengan metode aplikasi *spray* memberikan performa terbaik.

Kata kunci: *finishing*, *natural resin*, metode aplikasi, laminasi bambu

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EFFECTS OF NATURAL RESIN BASED FINISHING MATERIAL TYPE AND APPLICATION METHODS ON THE FINISHING QUALITY OF BETUNG BAMBOO LAMINATED BOARDS (Dendrocalamus asper)

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ABSTRACT

Betung bamboo laminated boards (Dendrocalamus asper) is one of the engineered products that has the potential to replace wood in the furniture and construction industries. However, its hygroscopic properties as well as surface characteristics cause this material to require a finishing treatment to improve its surface quality and durability. This study aims to evaluate the influence of the type of natural resin based finishing material and application method on the physical properties, surface characteristics, and quality of the finishing layer on bamboo laminated boards.

In this study, a completely randomized design was used as experimental design with two factors, namely the type of natural resin (gum damar, gum rosin, and frankincense) and the application method (brush and spray), with five replicates in each treatment combination. The parameters observed included density, moisture content, water absorption and thickness swelling (JIS 243 2003), surface roughness (ISO 4287:1997), hardness (ASTM E10), adhesion (ASTM D4541-22), contact angle, and K-value. The research data were analyzed using analysis of variance followed by the HSD test for significantly different factors.

The results show that the application of natural resin is able to improve the physical properties and finishing quality of bamboo laminated boards. The treatment resulted in increased contact angles, adhesion, and hardness of the finishing layer, as well as decreased moisture content, water absorption, thickness swelling, surface roughness, and K-value compared to controls. In general, the spray application method results in better surface characteristics than the brush method, mainly indicated by the higher adhesion value and contact angle, as well as the lower K-value. An increase in the contact angle followed by a decrease in the K-value indicates that the surface of the laminated boards becomes more hydrophobic after the application of natural resins. The combination of gondorukem resin with the spray application method provides the best performance.

***Keyword**: finishing, natural resin, application method, laminated bamboo*

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