

**THE EFFECT OF COLD PRESS AND GLUE SPREAD VALUE TO THE
PHYSICAL AND MECHANICAL PROPERTIES OF GLUE LAMINATED
BEAM FROM AKASIA FORMIS
(*Acacia auriculiformis A. Cunn. Ex Benth.*)**

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ABSTRACT

Deforestation cause of the supply of wood production isn't balance with the capacity of wood demand for industry has made the difficulty to look for wood material both in quantity or quality. Beside that, the number of Indonesian people as the big four in the world (Sensus in 2004 show 221.777.700 people) (Anonymous, 2004) have caused wood demand specially as house building material more and more increase. Wood adhesive technology especially wood laminated technology can solve this problem in using of wood in little diameter for being manipulated in size to be higher sortimen. Akasia formis wood that used as material of research is tree species that planted in high number both in forest people and HTI (Industrial Planting Forest). The objective of this research is to investigate the effect cold press and glue spread to the physical and mechanical properties of glue laminated beam from akasia formis wood.

The material for this research are akasia formis wood, urea formaldehyde adhesive producing PT. Palmolite Adhesive Industry Probolinggo, and NH_4Cl as hardener. This research is arranged in a completely randomized block design (CRBD) and employed in 3 x 3 factorial experiment with 3 replication as block sample. They are a part of stem like base, middle and top part. The factor employed in this research were cold press (i.e. 100 Psi, 150 Psi, and 200 Psi) and glue spread (i.e. 30 #/MSGL, 45 #/ MSGL, and 60 #/MSGL). Parameter that tested in this research are moisture content, specific gravity, static bending test (MoR and MoE), shear strength of glue line test, and compression parallel to the grain.

The result show that interaction effect was absent in all variables and also cold press show non significant difference in all parameter. Glue spread show very significant different in moisture content, specific gravity and compression parallel to the grain and also show significant difference in modulus of elasticity (MoE), shear strength of glue line, and specific compression parallel to the grain. More and more high glue spread value from 30 #/MSGL to 60 #/MSGL, so moisture content increase from 13,7 % to 15,2 %, specific gravity increase from 0,6985 to 0,7543, modulus of elasticity increase from 191.285 kg/cm^2 to 234.075 kg/cm^2 , shear strength of glue line decrease from 123 kg/cm^2 to 98,7 kg/cm^2 , compression parallel to the grain increase from 466 kg/cm^2 to 582 kg/cm^2 and specific compression parallel to the grain increase from 667 kg/cm^2 to 772 kg/cm^2 . Block of sample show very significant difference in shear strength of glue line and also show significant difference in specific gravity, specific shear strength of glue line, compression parallel to the grain and specific compression parallel to the grain. The changing block of sample from base, middle and top part of stem show result specific gravity value 0,7217, 0,7414 and 0,7201, shear strength of glue line value 71,7 kg/cm^2 , 77,9 kg/cm^2 and 70,4 kg/cm^2 , compression parallel to the grain value 495 kg/cm^2 , 547 kg/cm^2 , and 540 kg/cm^2 and also compression parallel to the grain value 667 kg/cm^2 , 721 kg/cm^2 and 722 kg/cm^2 . Generally, the physical and mechanical properties of glue laminated beam from akasia formis show better result than solid wood of akasia formis, except moisture content.

Key word : laminated beam, akasia formis wood, urea formaldehyde adhesive, cold press, glue spread

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