

Performance Tests of Wood Glues on Different Wood Species Used in Wood Workshops: Morogoro Tanzania

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Abstract : High tropical forests deforestation for solid wood furniture industry is among of climate change contributing agents. This pressure indirectly is caused by furniture joints failure due to poor gluing technology based on improper use of different glues to different wood species which lead to low quality and weak wood-glue joints. This study was carried in order to run performance tests of wood glues on different wood species used in wood workshops: Morogoro Tanzania whereby three popular wood species of *C. lusitanica*, *T. glandis* and *E. maidenii* were tested against five glues of Woodfix, Bullbond, Ponal, Fevicol and Coral found in the market. The findings were necessary on developing a guideline for proper glue selection for a particular wood species joining. Random sampling was employed to interview carpenters while conducting a survey on the background of carpenters like their education level and to determine factors that influence their glues choice. Monsanto Tensiometer was used to determine bonding strength of identified wood glues to different wood species in use under British Standard of testing wood shear strength (BS EN 205) procedures. Data obtained from interviewing carpenters were analyzed through Statistical Package of Social Science software (SPSS) to allow the comparison of different data while laboratory data were compiled, related and compared by the use of MS Excel worksheet software as well as Analysis of Variance (ANOVA). Results revealed that among all five wood glues tested in the laboratory to three different wood species, Coral performed much better with the average shear strength 4.18 N/mm², 3.23 N/mm² and 5.42 N/mm² for Cypress, Teak and Eucalyptus respectively. This displays that for a strong joint to be formed to all tree wood species for soft wood and hard wood, Coral has a first priority in use. The developed table of guideline from this research can be useful to carpenters on proper glue selection to a particular wood species so as to meet glue-bond strength. This will secure furniture market as well as reduce pressure to the forests for furniture production because of the strong existing furniture due to their strong joints. Indeed, this can be a good strategy on reducing climate change speed in tropics which result from high deforestation of trees for furniture production.

Keywords : climate change, deforestation, gluing technology, joint failure, wood-glue, wood species

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