

Abstract

Light weight wooden sandwich panels are widely used in the industry of furniture, doors, walls, wood artifacts and etc. Varese material could be used for production of light weight wooden panels which agricultural and industrial wood factories' waste are large group of them. But unfortunately tones of lingo-cellulosic materials are wasted without any appropriate use, since they can be used in production of low cast panels which can play an important role in decreasing the cost of final products. The purpose of this thesis is study of effect of different combination ratio of Sunflower stalk waste and poplar layer in the middle section of panel and also the incorporation ratio of Melamine formaldehyde resin and Urea-formaldehyde as the resin in the structure of light weight wooden sandwich panel. For this purpose after production of panel, its physical and mechanical resistance evaluated according to the ASTM standards, and the statistical analysis performed in SPSS (v20) software using factorial test and classification of means with Duncan's multiple range test. The experiment results indicate that by increasing the combination ratio of Sunflower stalk waste and poplar, and the incorporation ratio of Melamine formaldehyde resin and Urea-formaldehyde, model of rapture, elasticity and rigidity, internal bonding and core shear has been increased significantly. And in the case of producing panel with pure poplar, the maximum mentioned resistance has been achieved. The results show that increasing of the proportion of poplar cause improving in the resistance of panel in holding screws and nails and also decrease the water absorption and thickness swelling in 2 and 24 hours. In the compression resistance test, independent effect of resin and contrast effect of resin and middle layer material has been no significant effect.

Key words: Light weight sandwich panel, Sunflower stalk, poplar layer, waste material, Melamine formaldehyde



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**Physical and mechanical properties of
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scrap in core layer**

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