**Production of medium density fiberboard (MDF) sandwich board and evaluation of usage possibilities**

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| **Abstract**  In this study, the possibilities of using 20mm Polystyrene insulation boards in plate production by covering with 3mm MDF and 3mm Pine veneer were evaluated. Many studies have been done on insulation boards but similar study like this study has not been found in the literature about insulation board or the furniture industry [1-4]. With this study, it is aimed to reduce the amount of wood raw material usage and to create a new low-cost product that can be used in the production of light load bearing elements such as shelves for the furniture industry as well as its use as an insulation board. In the study, 3mm MDF boards were coated to 20mm polystyrene with PVA glue and 200gr glue per square meter. After bonding, the boards were compressed from the corners and middle parts by hand torture and kept for 24 hours. Modulus of rupture (MOR), modulus of elasticity (MOE) internal bond (IB), screw strength (SS) and density analyzes were performed by cutting the boards according to 25mm particle board test standards. According to the analysis results, the mechanical and density values ​​of the MDF coated board gave better results. (MOR: 7.4 MPa, MOE: 1955 MPa, IB: 0.14 MPa, SS: 14.9 N/mm, Density: 250 kg/m3). Lower mechanical and density values ​​were obtained from pine veneer covered boards compared to MDF (MOR: 6.08 MPa, MOE: 1608 MPa, IB: 0.07 MPa, SS: 12.53 N/mm, Density: 205 kg/m3). According to the analysis results, it has been evaluated that the MDF and wood coated polystyrene board can be used as insulation board and light load bearing board in furniture. |
| Keywords: *Foam board, Medium Density Fiberboard, Insulation, Furniture.* |

**References**

1. Özlüsoylu, İ., & İstek, A. Ağaç Kabuklarının İzolasyon Levha Üretiminde Değerlendirilmesi. Uluslararasi Multidisipliner Çalişmalari Kongresi, Girne-Kktc, 2018, 400-410.
2. Maloney, T. M. (1996). The Family Of Wood Composite Materials, *Forest Products Journal*, Vol:46, No:2.
3. Haygreen,J.G., & Bowyer,J.L.(1996). Forest Products And Wood Science, Third Edition. Iowa State Üniversity Press,Ames, Iowa, Usa
4. Özen, R. (1975). Dikey Yongalı Levhalar. *Journal Of The Faculty Of Forestry Istanbul University*, *25*(2), 85-100.