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Manufacture and Properties of Gypsum-Bonded Particleboard IV. Properties of gypsum-bonded particleboard made with raw material from waste gypsum boards

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Abstract: In order to study the recycling of waste gypsum boards, gypsum-bonded particleboards were manufactured by using the gypsum hemihydrate calcined from waste gypsum boards, and the mechanical properties of the particleboards bonded with recycled gypsum were examined. The amount of mixing water for the gypsum hemihydrate calcined from waste gypsum boards was high. However, the boards could be manufactured with the same amount of mixing water as reported for the pottery molding plaster in the previous paper because in the semi-dry type process it was not necessary to provide extreme mobility for the hemihydrate slurry. The mechanical properties of boards made from waste gypsum boards, such as the moduli of rupture (MOR) and elasticity (MOE) were improved. Also, the MOR and MOE values of the particleboards bonded with recycled gypsum containing the paper fibers were higher than those of boards where the paper fibers had been removed. It was found that the waste gypsum boards can be used as a raw material for gypsum-bonded particleboards.

Keywords: gypsum-bonded particleboard, waste gypsum boards, amount of mixing water

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