

Particle Cement Board Quality From Corn Cob (Zea Mays L.) Based On Differences In Particle Size

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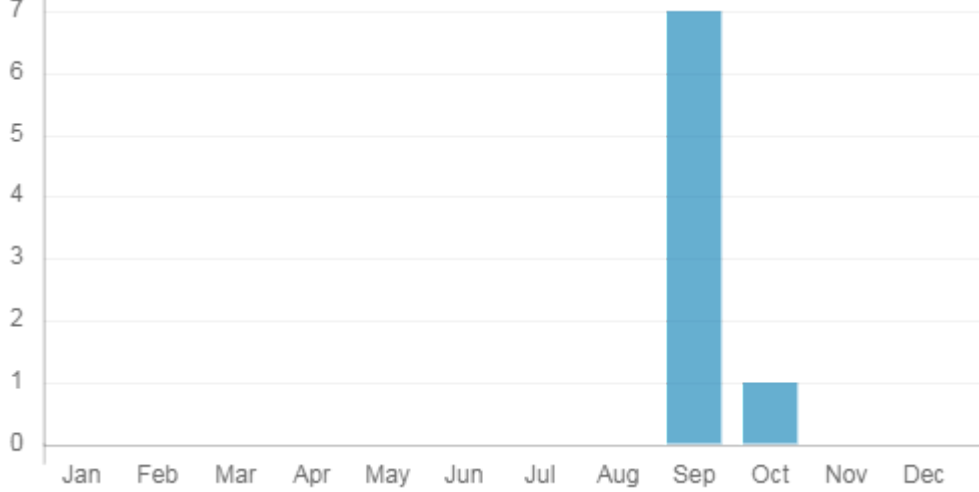
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Abstract

Utilization of agricultural waste is still lacking as raw material for biocomposites, so efforts are needed to use it, one of which is the manufacture of cement boards made from corn cobs. The aim of the study was to determine the effect of differences in the size of corn cob particles on the quality of cement particle board. The study was conducted with 3 treatments and 5 repetitions, namely treatment P1 (20 mesh), treatment P2 (40 mesh) and treatment P3 (50 mesh), using a ratio of cement to particles (3:1) with a pressing time of 20 minutes and pressure 40 bars. The research method refers to ISO 8335 (1987), BS 5669 (1989), MS 934 (1986) and SNI 8299 (2017) standards which include testing of physical properties (Density, Moisture Content, Water Absorption and Thickness Swelling) and mechanical properties including testing the Modulus of Elasticity (MoE), Modulus of Rupture (MoR) and Internal Bonding Strength (IBS). Analysis of research data using a completely randomized design (CRD). ANOVA analysis showed that the effect of the treatment of differences in the size of corn cob particles was very significant on testing the water content, water absorption, Modulus of Rupture (MoR). Internal Bonding Strength (IBS) is significant. Has no significant effect on density testing, thickness growth and Modulus of Elasticity (MoE). The best physical properties were density 1.164 g/cm³ (P3), moisture content 10.057% (P3), water absorption 11.630% (P3) and thickness swelling 1.413% (P3) while the best mechanical properties were MoE 2,814.758 N/mm² (P1), MoR 4.926 N/mm² (P3), and IBS 0.794 N/mm² (P3). Corn cob is quite well used as a raw material for making cement particle board.

Downloads



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