

**PENGARUH LAMA PERENDAMAN PARTIKEL, MACAM KATALIS DAN  
KADAR SEMEN TERHADAP SIFAT PAPAN SEMEN**  
**(The effect of particle immersion period, type of catalyst and cement portion on the  
properties of cement bonded board)**

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ABSTRACT

The objective of the study was to determine the effect of particle immersion period, type of catalyst and cement portion on the properties of cement bonded board. The laboratory scale cement bonded boards were manufactured using manii wood particles (*Maesopsis eminii*). The wood particles were immersed in cold water for 24 hours and 48 hours prior to board manufacture. The wood-cement-water ratios applied were 1: 2.4: 2 (cement portion 240%) and 1 : 2.5 : 2 ( cement portion 250%). Type of catalyst used were calcium chloride, magnesium chloride and aluminium sulphate at 5% of cement weight. Cement bonded boards without catalyst were also produced as control. Results showed that particle immersion period of 48 hours did not differ with that of 24 hours in improving cement bonded board properties. The properties were affected by type of catalyst. Magnesium chloride gave better dimensional stability and bending strength of cement bonded board compare to other catalysts. Cement portion affected the properties of cement bonded boards. The higher cement portion increased physical and mechanical properties of cement bonded boards. The higher cement portion could increase bending strength of the board by 31%. Higher cement portion also improved dimensional stability of 24 – 30% for thickness swelling, 20 – 40% on linear expansion and 10 – 12% for water absorption.

Keywords: Cement bonded board, particle immersion period, type of catalyst, cement portion, physical and mechanical properties. 2

ABSTRAK

Penelitian ini bertujuan mengetahui pengaruh lama perendaman partikel, macam katalis dan kadar semen terhadap sifat papan semen. Papan semen skala laboratorium dibuat dengan menggunakan partikel kayu manii (*Maesopsis eminii*) yang sudah direndam dalam air dingin selama 24 jam dan 48 jam. Perbandingan antara partikel kayu : semen : air dua macam yaitu 1 : 2,4 : 2 (kadar semen 240%) dan 1: 2,5 : 2 (kadar semen 250%). Katalis yang digunakan tiga macam yaitu kalsium klorida ( $\text{CaCl}_2$ ), magnesium klorida ( $\text{MgCl}_2$ ), dan aluminium sulfat ( $\text{Al}_2(\text{SO}_4)_3$ ) dengan tingkat kadar 5% dari berat semen. Di samping itu dibuat juga papan semen tanpa menggunakan katalis sebagai kontrol atau pembandingan. Hasil penelitian menunjukkan bahwa perendaman partikel 48 jam tidak berpengaruh nyata dalam memperbaiki sifat papan semen manii dibanding lama perendaman partikel 24 jam. Sifat papan semen manii sangat dipengaruhi oleh macam katalis yang digunakan. Penggunaan katalis  $\text{MgCl}_2$  memberikan sifat kestabilan dimensi dan keteguhan lentur yang lebih baik dibanding katalis lainnya. Kadar semen sangat berpengaruh terhadap sifat fisis dan mekanis papan semen manii. Semakin tinggi

kadar semen semakin baik sifat fisis dan mekanis papan semen yang dihasilkan. Penggunaan kadar semen 250% dapat meningkatkan keteguhan lentur sekitar 31% dibanding kadar semen 240%. Peningkatan kadar semen menyempurnakan stabilitas dimensi sekitar 24-30% pada pengembangan tebal, sekitar 20-40% pada pengembangan linier dan sekitar 10-12% pada penyerapan air.

Kata kunci: Papan semen, lama perendaman partikel, macam katalis, kadar semen sifat fisis dan mekanis