

ABSTRACT

This modern civilization is very dependent on cement mortar material. However, the nowadays problem is that the use of mortar is very vulnerable to environmental conditions become more often. Many buildings of mortar are corroded by salt solution and crack easily due to water penetrating the cement mortar. These problems are factors that contribute to the degradation of cement mortar. The durability of cement mortar has serious economic implications in the form of maintenance and replacement costs of a wall. Therefore, it is necessary to make a cement mortar that is water-repellent or hydrophobic. The purpose of this study was to fabricate and determine the characteristics of hydrophobic cement mortar made with various variations. Variations used are variations in the immersion composition of calcium hydroxide (Ca(OH)_2) and variations in the composition of THF Tetrahydrofuran (THF) with Poliuretan (PU). This type of research were experimental. The independent variables were variations in the composition of Ca(OH)_2 namely 10%, 20% and 30% and the molar variations of THF : PU were 5:6 molars, 1:10 molars, 0.1:10.9 molars with total for each variations were 11 molar. The control variables in this study were the composition of portland cement, aquades and silica sand 20-30 mesh with a ratio of 4:11:2 (according to SNI standards), cube cement mortar mold 5x5 cm, soaking time 7 days, heating temperature 60 °C, heating time for 1 hour and drying in the sun for 2 hours. The dependent variables are the contact angle and the cement mortar hardness value. The contact angle was measured using the sessile drop method and the hardness value using the vickers hardness tool. The result of this research is the successful fabrication of super hydrophobic cement mortar, with a maximum contact angle of 154° . The contact angle 154° occurs when the cement mortar is immersed with a concentration of 10% (Ca(OH)_2) without being coated with THF:PU. The results also showed a decrease in the value of the contact angle from the addition of the PU concentration to THF and the immersion concentration (Ca(OH)_2). From the results of the research, it was found that the optimum condition of hydrophobic cement mortar was at 10% (Ca(OH)_2) immersion with a contact angle of 154.14° degrees and a hardness of 139,4 kg/cm².

Keywords : Mortar cement, hydrophobic, contact angle, hardness