

**PENGARUH PENAMBAHAN *FLY ASH* PADA SEMEN
PORTLAND TIPE I DAN *PORTLAND COMPOSITE CEMENT*
(*PCC*) TERHADAP SIFAT FISIS MORTAR**

ABSTRAK

Penelitian tentang pengaruh penambahan *fly ash* pada semen portland tipe 1 dan *portland composite cement* (*PCC*) terhadap sifat fisis mortar telah dilakukan. Pencampuran dengan komposisi tertentu dimaksudkan untuk mendapatkan perbandingan dengan nilai kuat tekan dan kerapatan yang maksimum. Penelitian dilakukan dengan variasi perbandingan *fly ash* terhadap semen portland tipe 1 dan *PCC* masing-masing 0%, 10%, 15%, 20% dan 25%. Sampel mortar yang telah dibuat terlebih dahulu direndam menggunakan air kapur hingga umur 7 hari dan 28 hari sebelum dilakukan pengujian yang mengacu prosedur standar kerja BARISTAND. Uji yang dilakukan meliputi sifat mekanik dan fisis seperti kehalusan, kuat tekan, porositas dan densitas. Hasil menunjukkan nilai kehalusan semen tipe 1 dan *PCC* memiliki nilai kehalusan $\pm 3101,53 \text{ m}^2/\text{kg}$, sedangkan dengan penambahan *fly ash* nilai kehalusan yang didapatkan yaitu $\pm 3249,50 \text{ m}^2/\text{kg}$. Pada hasil uji kuat tekan nilai yang baik dalam penambahan *fly ash* yaitu berkisar 15% sampai dengan 20%, untuk semen *PCC* yaitu $365,73 \text{ kg}/\text{cm}^2$ dan tipe 1 yaitu $383,41 \text{ kg}/\text{cm}^2$. Dapat disimpulkan bahwa nilai kehalusan dengan penambahan *fly ash* lebih halus daripada nilai kehalusan semen. Sedangkan nilai kuat tekan *PCC* dengan penambahan *fly ash* 20% dihari ke 28 menyamai hasil nilai kuat tekan semen portland tipe 1 tanpa penambahan *fly ash* pada hari yang sama.

Kata Kunci : Densitas, *Fly ash*, Kehalusan, Kuat tekan, Mortar, Porositas,

INFLUENCE OF ADDITION OF FLY ASH IN PORTLAND CEMENT TYPE I AND PORTLAND COMPOSITE CEMENT (PCC) OF THE PHYSICAL PROPERTIES OF MORTAR

ABSTRACT

Research on the influence of addition of fly ash in portland cement type 1 and portland composite cement (PCC) of the physical properties of mortar was conducted. Mixing with certain composition intended to get a comparison with the value of compressive strength and maximum density. Research conducted with a variation comparison of fly ash to cement portland type 1 and PCC each 0%, 10%, 15%, 20% and 25%. Mortar samples that have been made will be soaked in lime water up to 7 days and 28 days prior to testing according to the standard procedure of work of BARISTAND. Test performed include physical and mechanical properties such as compressive strength, smoothness, porosity and density. The results show the initial value of smoothness of portland cement type 1 and PCC is $\pm 3101,53 \text{ m}^2/\text{kg}$, whereas with the addition of fly ash smoothness value obtained is $\pm 3249,50 \text{ m}^2/\text{kg}$. Test results on the values of compressive strength with the addition of fly ash ranges from 15% to 20% for PCC is $365,73 \text{ kg/cm}^2$ and for portland cement type 1 is $383,41 \text{ kg/cm}^2$. It can be concluded that the value of smoothness of cement with the addition of fly ash is more refined than the value of smoothness of ordinary cement. Whereas the value of compressive strength of PCC with the addition of 20% fly ash on 28th day match the value of compressive strength of portland cement type 1 without the addition of fly ash on the same day.

Keywords : *Blaine, Compressive strength, Density, Fly ash, Porosity, the Mortar*