ABSTRAK
PENGARUH PENAMBAHAN *SILICA FUME* TERHADAP KUAT LENTUR BETON PADA LINGKUNGAN AIR GAMBUR DI KOTA PALEMBANG

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Penelitian ini bertujuan untuk menganalisis pengaruh penambahan *silica fume* terhadap kuat lentur beton yang direndam dalam lingkungan air gambut di Kota Palembang. Air gambut yang bersifat asam dan mengandung zat organik tinggi dapat memengaruhi kualitas dan daya tahan beton, khususnya dalam proses hidrasi semen. Dalam penelitian ini, digunakan variasi kadar *silica fume* sebesar 0%, 6%, 8%, dan 10% dari berat semen untuk mengevaluasi pengaruhnya terhadap kuat lentur beton. Benda uji berupa balok beton direndam selama 28 hari di lingkungan air gambut. Sebanyak 15 sampel balok diuji dengan metode lentur dua titik pembebanan. Hasil pengujian menunjukkan bahwa benda uji tanpa *silica fume* (0%) mengalami penurunan kuat lentur sebesar 17%, benda uji dengan 6% *silica fume* mengalami penurunan sebesar 19%, sedangkan benda uji dengan campuran *silica fume* 8% hanya mengalami penurunan sebesar 3%. Namun, benda uji dengan campuran *silica fume* 10% mengalami penurunan yang signifikan sebesar 24%. Berdasarkan hasil ini, dapat disimpulkan bahwa penggunaan *silica fume* sebesar 8% adalah yang paling optimal untuk konstruksi di wilayah lahan gambut di Kota Palembang.

Kata kunci: air gambut, beton, kuat lentur, *silica fume*

ABSTRACT

PENGARUH PENAMBAHAN *SILICA FUME* TERHADAP KUAT LENTUR BETON PADA LINGKUNGAN AIR GAMBUR DI KOTA PALEMBANG

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This study aims to analyze the effect of adding silica fume on the flexural strength of concrete soaked in peat water environment in Palembang City. Peat water which is acidic and contains high organic matter can affect the quality and durability of concrete, especially in the cement hydration process. In this study, variations in silica fume content of 0%, 6%, 8%, and 10% of the weight of cement were used to evaluate its effect on the flexural strength of concrete. The test specimens in the form of concrete blocks were soaked for 28 days in a peat water environment. A total of 15 beam samples were tested using the two-point loading flexural method. The test results showed that the test specimens without silica fume (0%) experienced a decrease in flexural strength of 17%, the test specimens with 6% silica fume experienced a decrease of 19%, while the test specimens with a mixture of 8% silica fume only experienced a decrease of 3%. However, the test specimens with a mixture of 10% silica fume experienced a significant decrease of 24%. Based on these results, it can be concluded that the use of 8% silica fume is the most optimal for construction in peatland areas in Palembang City.

Keywords: peat water, concrete, flexural strength, silica fume