

## PEMANFAATAN LIMBAH ABU SEKAM PADI SEBAGAI SUBSTITUSI SEBAGIAN SEMEN PADA MORTAR SEMEN PASIR

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### INTISARI

Pemanfaatan limbah abu sekam padi dari pembakaran batu bata secara optimal dapat mengatasi masalah pencemaran lingkungan. Disamping itu juga dapat menghemat biaya konstruksi, karena dapat mereduksi penggunaan semen. Penambahan butiran halus yang lolos ayakan dengan ukuran 0,075 mm dapat meningkatkan *workability* mortar, dan menambah kepadatan serta kekuatannya. Penelitian ini untuk mengetahui kinerja abu sekam padi terhadap sifat fisis dan mekanis mortar, meliputi *workability* daya serap air, kuat tekan, kuat tarik, daya lekat dan nilai optimal prosentase penambahan abu sekam padi.

Metode penelitian yang digunakan dalam penelitian ini adalah metode eksperimen dengan skala laboratorium. Adapun benda uji dibuat dengan lima macam campuran yaitu: IPC : 5PS sebagai pembanding dan IPC : 5PS dengan substitusi abu sekam padi terhadap semen sebesar 10 %, 15%, 20 % dan 25 %, faktor air (semen+ASP) berkisar antara 0,92 - 1,05 dan nilai sebar antara 80 % - 90 %. Untuk setiap jenis campuran dibuat sejumlah 25 buah benda uji, dan dilakukan pengujian berupa : nilai sebar, serapan air, kuat tekan, kuat tarik dan lekatannya.

Hasil penelitian menunjukkan bahwa penambahan substitusi ASP berbanding lurus dengan penambahan air, dan berbanding terbalik dengan berat jenis, kuat tekan, dan kuat tarik. Hal ini disebabkan belum terjadinya reaksi kimia antara  $\text{SiO}_2$  dengan  $\text{CaO}$ , sehingga abu sekam padi hanya berfungsi sebagai *filler*/pengisi. Kuat tekan mortar berkisar antara 10,25 MPa –13,00 MPa, mortar termasuk tipe S, untuk substitusi ASP 0%, 10% dan 15%, dan tipe N untuk substitusi ASP 20% dan 25% ( SNI- 03 – 6882 -2002 ). Kuat lekat mortar 0,096 MPa (0,96 kg/cm<sup>2</sup>) pada substitusi ASP 25 %, sedangkan yang lainnya tidak terukur karena batu bata patah lebih dulu sebelum lekatan lepas.

**Kata kunci:** mortar, abu sekam padi, sifat fisis dan mekanis

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# UTILIZATION OF RICE HUSKS ASH AS A PARTIAL SUBSTITUTE CEMENT IN MORTAR

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## ABSTRACT

*Utilization of waste from the combustion of rice husk ash bricks optimally, can solve the problem of environmental pollution. It also can save the construction costs due to reducing in the use of cement. The addition of fine grains that pass the sieve on the size of 0.075 mm can improve the workability of mortar, minimum the voids and finally waterproof ability improve strength. This study is to determine the performance of rice husk ash on the physical and mechanical properties of mortar. Workability includes the water absorption, ability compressive strength, tensile strength, adhesion of the mortar and optimal percentage value addition of rice husk ash.*

*The research method used in this research was a run by analysing a series of samples experiments. The test piece was made with five kinds of mixtures, they were : 1 cement : 5 sand as a comparison and: 1 cement : 5 sand with rice husk ash substitution of cement by 10%, 15%, 20% and 25%, the water factor (cement + RHA) between 0.92 to 1.05 and the value spread between 80% - 90% for each test specimen made 25 pieces. Every type of mixture was tested was : the spread, water absorption, compressive strength, tensile strength and bonding strength*

*The results showed that the addition proportionally substitution RHA composed with addition of water, and inversely composed to the density, the compressive strength, tensile strength, due to a chemical reaction of SiO<sub>2</sub> and CaO, rice ash husk only serves as a filler since the reaction was take place after 4 weeks old of sample. Compressive strength of mortar ranged from 10.25 MPa -13.00 MPa, including the type S mortar, for the substitution ASP 0%, 10% and 15% ASP, and type N for substitution ASP 20% and 25% (SNI-03-6882 -2002). Bonding strength of mortar was 0.09 MPa (0.9 kg/cm<sup>2</sup>) at 25% has substitution of ASP, while others were not measurable because the specimen were bricks broken, before the bonding between the bricks was loose.*

**Keywords:** mortar, rice husk ash, physical and mechanical properties

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