

## ABSTRAK

**Surya Kurniawan Hutabarat, 4203240025 (2024). Sintesis Dan Karakteristik Beton Menggunakan Abu *Boiler* Kelapa Sawit Dan *Superplasticizer* Terhadap Kekuatan Beton.**

Beton merupakan bahan konstruksi yang umum digunakan dalam desain bangunan. Di Indonesia perkembangan infrastruktur semakin pesat sehingga dapat menyebabkan terjadinya kekurangan bahan dalam pembuatan beton yang berasal dari sumber daya alam maka inovasi dalam pembuatan beton perlu terus dikembangkan. Penelitian ini bertujuan untuk mengetahui seberapa besar pengaruh penambahan abu *boiler* kelapa sawit dan *superplasticizer* terhadap kekuatan tekan, daya serap air, morfologi dan mutu beton. Pembuatan benda uji beton berbentuk kubus ukuran 15cm x 15cm x 15cm dengan lima variasi komposisi beton yaitu beton tanpa campuran, beton dengan campuran ABKS 100 mesh pada variasi 1,5%, 3%, 4,5% dan 7,5% dan *Superplasticizer* 2% terhadap massa semen. Pada umur 28 hari perendaman dan 24 jam pengeringan beton dapat dilakukan pengujian. Hasil uji kuat tekan tertinggi pada beton dengan campuran *boiler* kelapa sawit dan *superplasticizer* terbesar 34,55 MPa pada variasi campuran 7,5 ABKS dan 2% SP dan terendah sebesar 20,83 MPa pada variasi tanpa campuran. Dengan daya serap air tertinggi sebesar 0,52% pada variasi tanpa campuran dan terendah sebesar 0,27% pada variasi campuran 7,5 ABKS dan 2% SP. Penambahan abu *boiler* kelapa sawit dan *superplasticizer* pada beton menghasilkan daya ikat yang terjadi pada pasta semen yang rapat sehingga kepadatan yang dihasilkan bertambah solid sehingga mengakibatkan reaksi hidrasi yang terjadi semakin meningkat.

**Kata Kunci:** Beton, abu *boiler* kelapa sawit, *superplasticizer*, daya serap air, kuat tekan, SEM EDX.



## ***ABSTRACT***

**Surya Kurniawan Hutabarat, 4203240025 (2024). Synthesis and Characteristics of Concrete Using Palm Oil Boiler Ash and Superplasticizer on Concrete Strength.**

*Concrete is a construction material that is commonly used in building design. In Indonesia, infrastructure development is increasingly rapid, which can lead to a shortage of materials for making concrete that come from natural resources, so innovation in making concrete needs to continue to be developed. This research aims to determine how much influence the addition of palm oil boiler ash and Superplasticizer has on the compressive strength, water absorption capacity, morphology and quality of concrete. Making concrete test specimens in the form of cubes measuring 15cm x 15cm x 15cm with five variations of concrete composition, namely concrete without mixture, concrete mixed with ABKS 100 mesh in variations of 1.5%, 3%, 4.5% and 7.5% and Superplasticizer 2 % of semen mass. At the age of 28 days of soaking and 24 hours of drying the concrete can be tested. The highest compressive strength test results were for concrete with a mixture of Boiler Palm Oil and Superplasticizer of 34.55 MPa in a mixture variation of 7.5 ABKS and 2% SP and the lowest was 20.83 MP a on variations without mixture. With the highest water absorption capacity of 0.52% in the unmixed variation and the lowest of 0.27% in the mixed variation of 7.5 ABKS and 2% SP. The addition of palm oil boiler ash and Superplasticizer to concrete produces a tight binding force in the cement paste so that the resulting density becomes denser, resulting in an increased hydration reaction occurring.*

**Keywords:** *Concrete, palm oil boiler ash, superplasticizer, water absorption capacity, compressive strength, SEM EDX.*

