

ABSTRACT

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-Ultra High Performance Concrete- Mix Design Using Local Nano Technology Based Material

(xv + 112 pages; 59 figures; 30 tables; 1 appendixes)

Conservation of natural resources in construction area has to begin with actual steps, one of them is by using the lighter but stronger structure. The objective of this research is to adopt the mix design of ultra high strength concrete with using local materials in Indonesia. UHPC is introduced in this research as new generation of concrete.

The basic principle of making something new in this study is by reviewing the smallest particle, which means in this UHPC is nanotechnology- based because it will use finest aggregate and be in the nanometer size range.

Special mixer for pasta is required to produce the adapting mix design for UHPC because in making this UHPC required a certain speed. There are four comparisons of mix design with different percentage of superplasticizer and two different curing methods in this research, which are soaking curing method and heating curing method up to 90° C. 32 specimens as indicated of concrete cylinder D 10 cm, T 20 cm have been produced for UPV test and crushing test.

The result of Ultrasonic pulse velocity (UPV) test showed that UHPC densities is very good category and the result of crushing test showed very brittle failure of all specimens. The maximum strength of the specimens, which can be achieved, is 140 MPa with Modulus Elasticity 49 GPa

Keyword : *Ultra High Performances Concrete, ultra high strength, Superplasticizer, Curing, UPV test*