

**A NEW TESTING METHOD FOR CREEP BEHAVIOR OF
SELF-COMPACTING CONCRETE AT EARLY AGE**

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Abstract

Creep and shrinkage of concrete are known to have significant effects at early age of concrete. To be able to simulate the behavior of creep and shrinkage during this stage, accurate and actual properties of concrete should be obtained from the test. However, by performing normal creep testing, applying constant dead load to specimen, some important and necessary parameters cannot be obtained. Furthermore, creep also has significant effects on loss of prestress. Such normal test cannot clearly explain this kind of behavior well. Therefore, a new testing method for creep test is proposed. From this testing method, the modulus of elasticity of concrete (as a function of time) that is a useful parameter in estimating creep and reliable strain value can be achieved. Concrete creep and shrinkage are affected by many parameters. The factors investigated in this research were type of cement, cement content and w/c ratio, age at loading/drying, and stress/strength ratio. The tests were performed on mortar of self-compacting concrete. It was found that type of cement has slight effect on creep due to its difference in chemical compositions. For the same day of loading and same stress/strength ratio of applied load, the higher the w/c ratio the larger creep. Age at loading also has effect on creep such that the later age at loading, the smaller creep is. Stress/strength ratio has significant effect on creep. A new creep factor is proposed and it is found to give good agreement with the conventional terms, which are specific creep and creep coefficient.