

15. Study on Prediction of Shrinkage Strain for High-Strength Concrete

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In order to grasp the shrinkage strain characteristics for high-strength concrete in 48~100N/mm² class, measures of shrinkage strain, which was a factor of the type of binding material, water binder ratio, dry condition, and effect of thermal were carried out. And the predicting model of shrinkage strain was proposed based on experimental data. Those results are shown in the following.

- i) The autogenous shrinkage increased as the volume of the binding material increased.
- ii) The autogenous shrinkage of concrete using high-Beloit series low heat cement is less than a case of using ordinary Portland cement. But the autogenous shrinkage increased when silica-fume was used.
- iii) The autogenous shrinkage strain ratio in shrinkage strain under dry condition increased as water binder ratio decreased.
- iv) The autogenous shrinkage of concrete for water binder ratio less than 28% increased as the curing thermal rose.
- v) It was possible to predict approximate shrinkage strain of concrete by the proposed predicting mode, which was a function of the volume of the binding material.

Key words: high-strength concrete, shrinkage strain, autogenous shrinkage, prediction