The influence of superabsorbent polymers on the autogenous shrinkage properties of cement pastes with supplementary cementitious materials

Fly ash and blast-furnace slag containing binders are frequently used in the construction industry and it is important to know the extent of autogenous shrinkage and its (ideal) mitigation by superabsorbent polymers in these systems as a function of their age. In this paper, the autogenous shrinkage was determined by manual and automated shrinkage measurements. Autogenous shrinkage was reduced in cement pastes with the supplementary cementitious materials versus Portland cement pastes. At later ages, the rate of autogenous shrinkage is higher due to the pozzolanic activity. Internal curing by means of superabsorbent polymers is successful, independent of this long term higher rate of shrinkage in mixtures with supplementary cementitious materials.