

Abstract

Most mechanical properties and durability of cementitious materials are related to the performance of the hydrated cement that coats the granular skeleton. In this paper, concrete is formulated by substituting 30% of cement by finely ground glass powder. The experimental study consists of investigating the effect of conservation in tap water or sulphate water on the performance of concrete. The mechanisms of concrete damage have been related to the development of the microstructure of the material. The degradations were observed using scanning electron microscope (SEM) and quantified by X-ray diffraction (XRD). In addition, chloride ions permeability and gas permeability tests were performed. The results showed that glass powder presents a pozzolanic activity and hence it affects favourably the microstructure of the paste which becomes denser and less permeable