Abstract

This paper investigates the effect of microsilica, water proofer and super plasticizer on the durability of concrete to phosphoric acid attack, in addition to their sole and combined effects on workability, air content, modulus of elasticity, durability to freezing thawing, compressive strength and modulus of rupture after 28 days. Different microsilica, water proofer and super plasticizer contents were considered: 10%, 15% and 20% by weight of cement for microsilica, 0.4, 0.6 and 0.8 L for water proofer and 0.15, 0.2 and 0.25 L for super plasticizer. The water to cement ratio was considered to be constant in this study. The degree of acid attack was evaluated by measuring the percentage changes in weight of concrete cubes. The results showed that the combined effect of microsilica and water proofer was the best to enhance the durability of concrete to phosphoric acid attack without major effect on the response of concrete to other factors. The optimum concrete mixes were 10% microsilica with medium portions of water proofer.