

Strength, porosity and corrosion resistance of ternary blend Portland cement, rice husk ash and fly ash mortar

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Abstract

This paper presents a study of the strength, porosity and corrosion resistance of mortars made with ternary blends of ordinary Portland cement (OPC), ground rice husk ash (RHA) and classified fly ash (fine fly ash, FA). Compressive strength, porosity and accelerated corrosion with impressed voltage (ACTIV) were tested. The results show that the use of ternary blend of OPC, RHA and FA produces mortars with improved strengths at the low replacement level with RHA and FA and at the later age in comparison to that of OPC mortar. The porosity of mortar containing pozzolan reduces with the low replacement level of up to 20% of pozzolan, but increases with the 40% replacement level. The chloride induced corrosion resistance of mortar as measured by ACTIV is, however, significantly improved with the use of both single pozzolan and the ternary blend OPC, RHA and FA. The corrosion resistance of ternary blend mortar is higher than that of mortar containing single pozzolan. The use of ternary blend OPC, RHA and FA is very effective in enhancing chloride induced corrosion of mortar.