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Corrosion Control by Using Zinc as Sacrificial Anode Cathodic Protection in Geopolymer Concrete

Abstract

This research is about the corrosion control by using zinc as sacrificial anode cathodic protection in geopolymer concrete that is produced by the reaction of fly ash, fine aggregate, and coarse aggregate with an alkaline activator. Geopolymer is an alternative to the ordinary Portland cement (OPC) due to environmental friendly, low cost production, and workability. Tests are carried out on mild steel bar which embedded in 100 mm × 100 mm × 100 mm cube of geopolymer concrete. The potential values of the steel bar embedded in geopolymer concrete have been conducted by open circuit potential (OCP) testing. From the result obtained, the potential values of sacrificial anode cathodic protection samples were lower than control samples for 7 and 28 days cured which −0.967 V and −1.389 V, respectively. From Pourbaix diagram, the control samples were located at passivity region, while the SACP samples were located at immunity region. © 2020, The Minerals, Metals & Materials Society.

Keywords

Corrosion; Geopolymer; SACP