

## **Corrosion behavior of organic epoxy-zinc coating with fly ash as an extender pigment**

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### **ABSTRACT**

The utilization of industrial waste like fly ash may reduce the environmental risk. The properties of fly ash are useful and may contribute in organic coating field. This paper study the new strategy for coating with enhanced cathodic and barrier protection simultaneously. The aim of this study is to show that the low pigment volume concentration (PVC) of the coating may have a great protection by introducing a small amount of fly ash as an extender pigment into the coating material. Specifically, we compare the protection offered by epoxy coating with 10% PVC. The zinc pigment in the coating was replaced with fly ash at 10, 20, 30 and 40 vol/vol %. The replacing of fly ash in the formulation reduced the pigments percentage in the coating. Polarization test was conducted up to 30 days. The corrosion behaviors of the coated specimens were observed, and the corrosion rates were calculated based on the corrosion kinetics obtained from the test. The results demonstrated that addition of fly ash into the coating material, galvanizing the coated specimen, thus proved that fly ash has cathodic properties. The addition of fly ash changes the mechanism of protection from barrier protection mainly came from epoxy resin to cathodic protection from fly ash.

### **KEYWORDS**

Fly ash; Organic coating; Cathodic protection; Barrier protection; Extender pigment

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