

Effect of Polyaspartic metal coating on corrosion rate reduction in transmission unburied pipelines

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Corrosion can damage everything from a tiny metal object to the largest metal part such as airplanes, airlines and massive metal construction. Corrosion is harming to ecology, reduces durability of materials, risking living being and waste money. There are many ways to protect metals from corrosion such as corrosion inhibitors, cathodic protection and coatings.

Polyaspartic metal coating is one of the effective methods for preventing corrosion on unburied pipeline.

In this work the possibility of corrosion rate reduction by applying Polyaspartic metal coating has been studied in order to achieve a durable film coating on pipeline surfaces. This coating is a new generation of smart protective metal coating. The main purpose of producing this coating is to rectify all the defects in proportion to the other protective metal coatings. In order to measure corrosion rate reduction *Electrochemical Impedance Spectroscopy* (EIS) method was used. By increasing the adhesion on metal surfaces or between the subsequent coatings layers, the corrosion rate is reduced definitely.

The Polyaspartic metal coating not only increases the adhesion but also creates a suitable coating layer to protect the metal surfaces against mechanical and chemical damages and thermal shock. The results of EIS test showed which percentage of the binder was proper to achieve the best formulation of the Polyaspartic coating with maximum ability to reduce corrosion rate. The study result will be used in wide range of industries that are using metal surfaces and especially in unburied pipeline industries.

Key words: *Polyaspartic, corrosion, coating, EIS, adhesion.*