

COATING CONDUCTANCE – FRIEND or FOE - be careful what you specify

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Abstract

The “quality” of a pipeline coating has a direct bearing on the cathodic protection requirements for a buried pipeline. Quality can be defined in many ways, and is a combination of the intrinsic properties of the coating material itself, the characteristics of the applied coating, the extent of mechanical damage to the coating during pipeline installation and the coating age/degradation properties.

NACE Standard TM0102-2002^[1] offers a definition of coating quality in terms of the electrical conductance characteristics of an installed pipeline, and provides a standard test method for measurement.

The values given in TM0102 bear little resemblance to typical properties of coatings reported in Baeckman & Schwenk^[2] on page 159. The concept of normalising the coating conductance presented in TM0102 further complicates the issue and can lead to anomalous conclusions.

Project specifications may use the concepts given in TM0102 to ensure that an installed pipeline meets the design parameters that have been set. For example, a value of $100\mu\text{S}/\text{m}^2$ has been used as the maximum allowable conductance for a newly installed pipeline. However, the question arises whether the value should be related to soil resistivity as suggested in the concept of “normalised” specific conductance.

Using data from an actual pipeline construction project, this paper will illustrate the pitfalls of applying a parameter to an acceptance criterion without fully understanding the principles of that parameter and the consequences of the specification requirement.

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**[1] Measurement of Protective Coating Electrical
Conductance on Underground Pipelines**

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[2] Handbook of Cathodic Corrosion Protection

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