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Corrosion of metals and alloys — Guidelines for corrosion test by electrochemical noise measurements

Corrosion des métaux et alliages — Lignes directrices pour essais de corrosion par mesures de bruit électrochimique

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Foreword

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The committee responsible for this document is ISO/TC 156, *Corrosion of metals and alloys,* in cooperation with the ECG-COMON (European Cooperative Group on Corrosion Monitoring of Nuclear Materials, http://www.ecg-comon.org).

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Corrosion of metals and alloys — Guidelines for corrosion test by electrochemical noise measurements

1 Scope

This International Standard is intended to assist in corrosion testing by electrochemical noise measurement. It covers test procedures and analysis methods for reliable measurement of electrochemical noise for both uncoated and organically coated metal.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 8044, *Corrosion of metals and alloys — Basic terms and definitions*

ISO 17475, *Corrosion of metals and alloys — Electrochemical test methods — Guidelines for conducting potentiostatic and potentiodynamic polarization measurements*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 8044 and the following apply.

3.1
electrochemical noise
EN
fluctuation typically at low frequencies (≤1 Hz) and low amplitude in current and potential generated by electrochemical reactions and other processes on the surface, for example, bubble evolution

3.2
electrochemical potential noise
fluctuation in potential (typically in the range of μV to mV) of an electrode relative to a reference electrode or fluctuation in potential between two similar electrodes

3.3
electrochemical current noise
fluctuation in current (typically in the range of nA to μA) of one electrode or between two electrodes

3.4
electrochemical noise resistance
resistance obtained by dividing the standard deviation of potential noise by the standard deviation of current noise from the time record

3.5
power spectral density of potential
PSD_E
power present in the potential noise as a function of frequency

3.6
power spectral density of current
PSD_I
power present in the current noise as a function of frequency

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