



Standard Guide for Evaluating and Qualifying Oilfield and Refinery Corrosion Inhibitors in the Laboratory¹

This standard is issued under the fixed designation G170; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This guide covers some generally accepted laboratory methodologies that are used for evaluating corrosion inhibitors for oilfield and refinery applications in well defined flow conditions.

1.2 This guide does not cover detailed calculations and methods, but rather covers a range of approaches which have found application in inhibitor evaluation.

1.3 Only those methodologies that have found wide acceptance in inhibitor evaluation are considered in this guide.

1.4 This guide is intended to assist in the selection of methodologies that can be used for evaluating corrosion inhibitors.

1.5 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory requirements prior to use.*

2. Referenced Documents

2.1 ASTM Standards:²

- D1141 Practice for the Preparation of Substitute Ocean Water
- D4410 Terminology for Fluvial Sediment
- G1 Practice for Preparing, Cleaning, and Evaluating Corrosion Test Specimens
- G3 Practice for Conventions Applicable to Electrochemical Measurements in Corrosion Testing
- G5 Reference Test Method for Making Potentiostatic and Potentiodynamic Anodic Polarization Measurements
- G15 Terminology Relating to Corrosion and Corrosion Test-

ing (Withdrawn 2010)³

- G16 Guide for Applying Statistics to Analysis of Corrosion Data
- G31 Guide for Laboratory Immersion Corrosion Testing of Metals
- G46 Guide for Examination and Evaluation of Pitting Corrosion
- G59 Test Method for Conducting Potentiodynamic Polarization Resistance Measurements
- G96 Guide for Online Monitoring of Corrosion in Plant Equipment (Electrical and Electrochemical Methods)
- G102 Practice for Calculation of Corrosion Rates and Related Information from Electrochemical Measurements
- G106 Practice for Verification of Algorithm and Equipment for Electrochemical Impedance Measurements
- G111 Guide for Corrosion Tests in High Temperature or High Pressure Environment, or Both

2.2 NACE Standards:⁴

- NACE-5A195 State-of-the-Art Report on Controlled-Flow Laboratory Corrosion Test, Houston, TX, NACE International Publication, Item No. 24187, December 1995
- NACE-ID196 Laboratory Test Methods for Evaluating Oil-Field Corrosion Inhibitors, Houston, TX, NACE International Publication, Item No. 24192, December 1996
- NACE-TM0196 Standard Test Method “Chemical Resistance of Polymeric Materials by Periodic Evaluation,” Houston, TX, NACE International Publication, Item No. 21226, 1996

2.3 ISO Standards:⁵

- ISO 696 Surface Active Agents — Measurements of Foaming Power Modified Ross-Miles Method
- ISO 6614 Petroleum Products — Determination of Water Separability of Petroleum Oils and Synthetic Fluids

3. Terminology

3.1 Definitions of Terms Specific to This Standard:

¹ This guide is under the jurisdiction of ASTM Committee G01 on Corrosion of Metals and is the direct responsibility of Subcommittee G01.05 on Laboratory Corrosion Tests.

Current edition approved Nov. 1, 2012. Published November 2012. Originally approved in 2001. Last previous edition approved in 2006 as G170 – 06. DOI: 10.1520/G0170-06R12.

² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

³ The last approved version of this historical standard is referenced on www.astm.org.

⁴ Available from National Association of Corrosion Engineers (NACE), 1440 South Creek Dr., Houston, TX 77084-4906, <http://www.nace.org>.

⁵ Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, <http://www.ansi.org>.