



Standard Practice for Evaluating and Qualifying Oilfield and Refinery Corrosion Inhibitors Using Jet Impingement Apparatus¹

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1. Scope

1.1 This practice covers a generally accepted procedure to use the jet impingement (JI) apparatus for evaluating corrosion inhibitors for oilfield and refinery applications in defined flow conditions.

1.2 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

1.3 *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 limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:²

- D1141 Practice for the Preparation of Substitute Ocean Water
- D1193 Specification for Reagent Water
- D4410 Terminology for Fluvial Sediment
- G1 Practice for Preparing, Cleaning, and Evaluating Corrosion Test Specimens
- G5 Reference Test Method for Making Potentiodynamic Anodic Polarization Measurements
- G16 Guide for Applying Statistics to Analysis of Corrosion Data

¹ This practice 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.

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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.

- 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
- G170 Guide for Evaluating and Qualifying Oilfield and Refinery Corrosion Inhibitors in the Laboratory
- G184 Practice for Evaluating and Qualifying Oil Field and Refinery Corrosion Inhibitors Using Rotating Cage
- G185 Practice for Evaluating and Qualifying Oil Field and Refinery Corrosion Inhibitors Using the Rotating Cylinder Electrode
- G193 Terminology and Acronyms Relating to Corrosion

3. Terminology

3.1 The terminology used herein shall be in accordance with Terminology D4410, Guide G170, and Terminology G193.

4. Summary of Practice

4.1 This practice provides a method for evaluating corrosion inhibitor efficiency in jet impingement (JI) apparatus. The method uses a well-defined impinging jet set up and mass loss or electrochemical techniques to measure corrosion rates. Measurements are made using three different experimental designs and at several flow rates to evaluate the inhibitor performance under increasingly severe hydrodynamic conditions.