

Comprehensive Services for Immersive Corrosion Testing of Metals and Alloys Across a Wide Spectrum of Test Subjects



Immersion corrosion testing is a method used to determine the rate of corrosion of a test article, often a metal, in aqueous solution. Though this test can be used as an assessment tool for many applications, it is commonly used to evaluate the corrosivity of liquids. These studies are essential for both technical and formulation grade products and can be performed on a range of products including chemical and biological crop protection products, industrial chemicals, drugs and biologics, cosmeceuticals as well as coating and packaging materials.

Aragen Life Sciences has established a state-of-the-art laboratory with modern equipment to perform immersion corrosion testing on metals and alloys in the presence of a wide range of test articles. Our team of certified and trained experts deliver high quality services by meeting customer needs promptly, while adhering to specifications and standards that result in clear and accurate data. Aragen's collaborative approach ensures that the immersion corrosion services provided align with client objectives as well as regulatory requirements.

Objective of the tests: The objective is to test the immersion corrosion of metals and alloys in the presence of test article. The test article is placed in contact with various metals such as aluminium, copper, zinc, stainless steel, mild steel, and brass, to generate data on compatibility of test article with metal(s) and alloy(s), as required. Studies to assess corrosion are performed as per guideline ASTM G31, which describes the factors that influence laboratory immersion corrosion tests, particularly mass loss.

Test guideline: The study is performed in compliance with the study plan which incorporates recommendations made in the following: ASTM Designation: NACE TM0169/ G31-12a "Standard Guide for Laboratory Immersion Corrosion Testing of Metals" Copyright © ASTM, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959, United States.

Test Specimens: Aluminium, Copper, Zinc, Stainless steel, Mild steel, Brass.

Aragen's Capabilities:

- Determine corrosion rates for metals in an aqueous environment
- Experience with a range of test subjects
- Test duration from 24 hours to 2,000+ hours
- Professional photography to document performance changes

Specifications:

- ASTM A262, Practice A, B, C and F - Intergranular corrosion testing
- ASTM G28, Method A - Susceptibility to intergranular corrosion
- ASTM G48, Methods A, B and C - Resistance to pitting and crevice corrosion

Test specifications:

- Test is performed in specific resin flask (glass kettle) at specific temperature and duration. The reflux condensers are used to avoid the evaporation loss of the test solution.
- The three test specimens of same metal or alloy are placed in the test solution in such way that, one test specimen is in air, one half dipped in test solution and half in air and one test specimen is totally dipped in test solution.
- After completion of the test period, the metal specimens are observed visually for corrosion characteristics, perforation and darkening. The metal and alloys are cleaned, weighed and dimensions are recorded. The test item is characterized for active ingredient content, pH, and density to determine the effect of metal or alloy on the test specimens. The corrosion rate (mils per year) is determined based on loss in weight of the test specimen.
- A control specimen for each metal is placed with analytical grade water. The results of the reference metal (Control Specimen) are used as correction of the corrosion.
- Based on the observations the corrosion rate is determined for each metal specimen placed with the test solution.

Aragen Expertise and Experience:

Aragen holds substantial proficiency in conducting immersion corrosion tests, adhering to relevant protocols, and ensuring that all investigations adhere to the principles of Good Laboratory Practice (GLP). Over the past half-decade, we have executed immersion corrosion assessments for over 50 different test subjects in the presence of different metals and alloys. The outcomes and findings from these corrosion tests have been submitted to various regulatory authorities.

The Aragen Advantage:

- OECD GLP compliant and AAALAC accredited facilities
- DABT and ACVP board-certified toxicologists and pathologists
- Complete GLP safety and toxicology programs for many compound types
- Bioanalysis, pathology and histopathology performed onsite
- Comprehensive bioanalytical support for small and large molecules
- Over 16,000 GLP studies performed to date

Aragen Life Sciences is a leading contract research, development and manufacturing organization offering end-to-end integrated and standalone solutions for pharmaceutical, biotechnology, crop protection and industrial chemical industries. For more information on our services and to speak with our subject experts, write to us at bd@aragen.com.

Let's begin the conversation

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