

Standardized Corrosion Testing

Southwest Research Institute® (SwRI®) has over 25 years of experience in corrosion and materials failure research. A multidisciplinary group of engineers and scientists offer a comprehensive approach to solving corrosion problems for government and industry. Flexible, customized tests are designed to meet the long- and short-term needs of the client.

The Environmental Performance of Materials (EPM) Laboratory has extensive facilities and state-of-the-art instrumentation for:

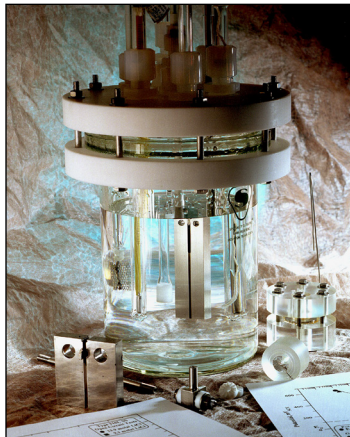
- Long-term exposure testing
- Materials selection
- Failure evaluation
- Life prediction studies

Electrochemical Testing

The EPM Lab's electrochemical instrumentation is used to monitor materials performance in corrosive environments. Capabilities include testing and evaluation of:

- Corrosion rates
- Galvanic corrosion
- Uniform corrosion
- Impedance
- Pitting

Using data generated from these studies, SwRI scientists and engineers analyze corrosion mechanisms and develop innovative solutions to mitigate the effects of corrosion in industrial environments.



Testing and evaluation of corrosion rate, galvanic corrosion, uniform corrosion, impedance and pitting corrosion are a few examples of the extensive electrochemical testing capabilities testing program at SwRI.

DE131985



DOI16994_6556

High pressure high temperature (HPHT) testing can be performed to determine stress cracking and/or mass loss corrosion effects under H₂S, CO₂, or other gaseous environments. Testing can be performed up to 650°F and 20,000 psi.

Sour Gas Testing

SwRI offers an array of H₂S and high-pressure testing to provide solutions for downhole production issues that arise from stress corrosion cracking. Sour gas testing (H₂S) is conducted in both gaseous and aqueous environments in configurations that include:

- Static or stirring
- Slow strain rate
- Tensile
- Fatigue
- Creep

The testing environment may also include CO₂, CH₄ and N₂.



DOI14536_7369

SwRI performed stress corrosion cracking (SCC) evaluations using C-rings. Specimens were exposed to a downhole simulated environment and evaluated for SCC.

Atmospheric Corrosion Testing

In the EPM Lab's two cyclic corrosion chambers, the long-term performance of materials can be established under simulated environmental conditions to determine the effect of factors such as humidity, precipitation and heat on:

- Galvanic effects
- Pitting
- Stress corrosion cracking
- Coatings performance
- Materials degradation

ASTM, NACE and other standardized tests are conducted in SwRI's atmospheric corrosion testing program. Routine tests used in the military and the automotive industry include:

- GM9540P – accelerated corrosion
- SAE J2334 – laboratory cyclic corrosion
- ASTM B117 – salt fog



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SwRI's 10,000-square-foot Environmental Performance of Materials Lab can accommodate a wide variety of tests to solve industrial-related corrosion problems.



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Slow strain rate (SSR) testing is used to determine cracking susceptibility in various environments including high pressure and high temperature.



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Precipitation and particulate chemistry, wet and dry deposition, and cyclic corrosion are some of the important factors measurable using the EPM Lab's three environmental corrosion chambers.

We welcome your inquiries. For additional information, please contact:

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Southwest Research Institute is an independent, nonprofit, applied engineering and physical sciences research and development organization using multidisciplinary approaches to problem solving. The Institute occupies 1,200 acres in San Antonio, Texas, and provides more than 2 million square feet of laboratories, test facilities, workshops, and offices for nearly 3,000 employees who perform contract work for industry and government clients.

Find us on



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