

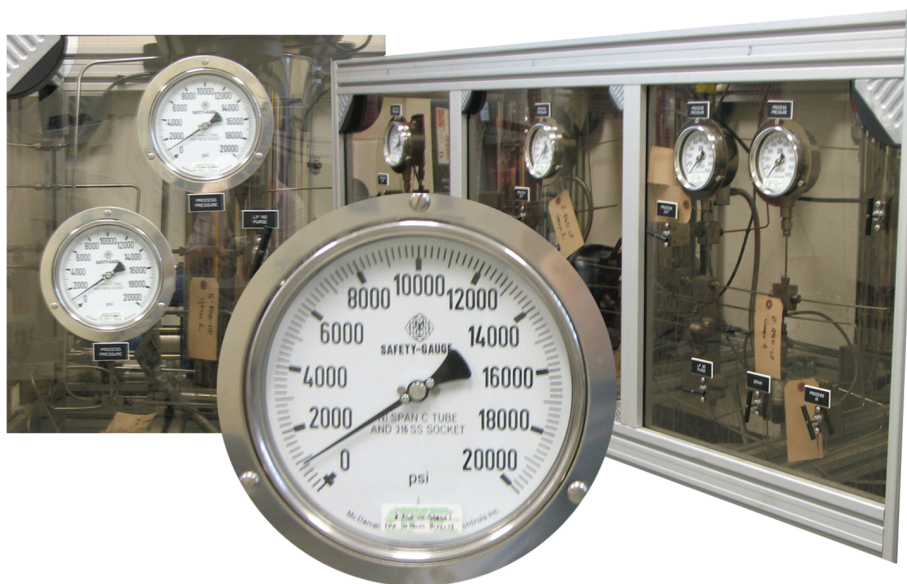


AKRON RUBBER DEVELOPMENT LABORATORY, INC.

High Temperature / High Pressure Aging & Rapid Gas Decompression (RGD) Testing

Independent Testing for Today's Downhole and Oil Industries

Polymer engineering and material qualification for oil and gas applications are daily challenges for engineers as they deal with ever higher pressures and temperatures at new depths and in new gases. Akron Rubber Development Laboratory, Inc. (ARDL) recognizes the need to support the Oil & Gas Industry with independent testing and has expanded its reputation as a world leader in material development and problem solving by investing in technology and equipment to meet today's down-hole application requirements. ARDL is accredited by A2LA to perform ISO 23936, NORSOK M710 and NACE TMO 192 testing for elastomers and thermoplastics.



The expanded qualification of non-metallic sealing material capabilities includes NORSOK M710 Rev 2 (Annex A and Annex C) aging in high temperature/high pressure environments in fluid to measure the change in mechanical performance and chemical degradation.

Testing Standards Available at Akron Rubber Development Laboratory, Inc.

- ISO 23936
- NORSOK M710
- NACE TMO 192



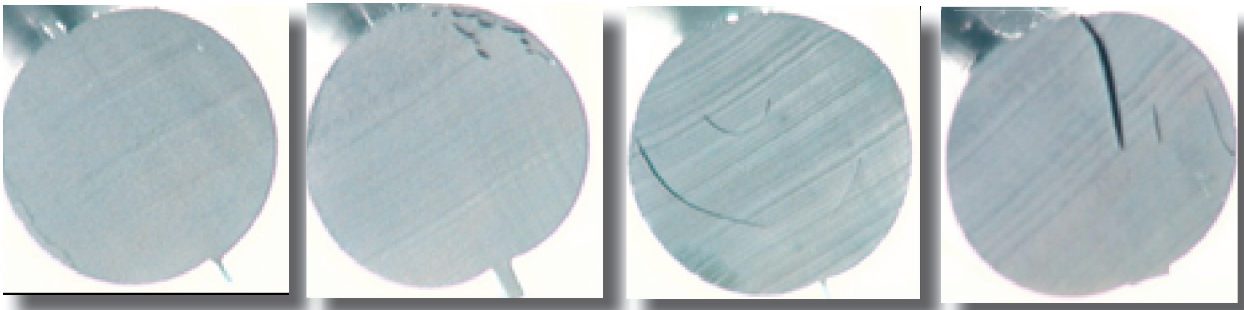
ARDL RGD Capabilities (cont.)

Did you know you can probably save money and improve the performance of the rubber products you produce?

The pressures available to our customers range from 0 to 20,000 psig for vessels which can test up to three different compounds simultaneously in a variety of test fluids. Our pressure chambers are set up to age materials in sweet and sour gas (containing H₂S) environments as well as with other chemicals found in deep well applications.

Temperature capabilities range up to 300°C and specimen sizes include BS-325 size O-rings and standard ASTM dumbbells. ARDL RGD/Explosive Decompression capabilities for NORSOK M710 Rev 2 (Annex B) and NACE TMO 192 allow for pressures up to 6,000 psig and release rates up to 500 psig per minute performed to the number of cycles required by the customer. ARDL's expertise in materials analysis includes examination of the material cross sections using 10X microscopy.

- Sweet Well (CH₄), Sour Well (H₂S, CO₂)
- Material Service Life Prediction
- Pressure capability: Zero to 137.9 MPa (20,000 psig)
- Temperature capability 300°C (572°F)
- 2-liter and 8-liter vessels available depending on specimen size, quantity and test pressure.
- Decompression rates greater than 40/bar second
- 3 inch Inside Diameter and 20 inches length
- Automated testing
- Long term aging capabilities
- Custom testing available as well as physical/chemical properties, heat aging, fluid immersion and other tests



Contact our experts today at answers@ardl.com to discuss your high temperature/high pressure and RGD testing needs.