

In our state-of-the-art testing facilities, we use various accelerated testing procedures to ensure the performance of Select-a-Seal gaskets.

Accelerated testing theory is based on identifying application failure modes and their frequency during "normal" use. Once these failures are identified, they are associated with the environmental stresses that cause them.

To validate Select-a-Seal gaskets, we use three types of accelerated testing:

- Heated, pressurized fluid recirculation
- Thermal cycling of components in an environmental chamber
- And, thermal cycling of aluminum components on a steam table

Some components, such as water pumps, are tested by circulating hot antifreeze through the waterpump under higher than normal pressure. These tests typically run several thousand hours under constant heat and pressure. We have heated fluid flow rigs set up for anti-freeze, oil, and transmission fluid.

Thermal cycle testing is performed in an environmental chamber programmed to cycle between minus 40° C and 150° C every two hours for a total 4-hour cycle. Individual components are tested as well as complete engines, transmissions, and axle housings to see what effects thermal variations have on Select-a-Seal gaskets.

Typical Thermal Cycle Test Components

- Transmission pans and housings
- Axle covers and housings
- Valve and valley covers
- Oil pans
- Intake manifolds
- Water pumps
- Rear seal carriers

Joints are bolted together using the minimum torque allowed, filled with the appropriate service or test fluid, and pressurized to slightly higher than normal service pressures. While the equipment is capable of fluid circulation during thermal cycling, most tests are run with static fluid charges so that thermal cycling is maximized. Tests are normally run 1000 hours or more, with results including bolt load retention, observations of leak, and observations of gasket condition upon test completion.

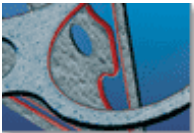
Finally, we occasionally perform steam table testing, which consists of bolting aluminum castings to either cast iron engine blocks or large steel plates. On a 10-minute cycle, chilled water at minus 20° C followed by steam at 150° C are circulated through the components. We have run as many as five thousand test cycles on components to determine if the gaskets are designed properly to withstand the difference in thermal expansion rates of the flanges, which can cause leakage in the fluid cavities, or torn, cracked, or abraded gaskets.

Thermal cycling test results often show that very robust carrier materials are needed in joints, especially where aluminum is bolted to steel or cast iron, and that the gaskets must be thick enough to handle shear strain without slipping. The net result is: we have successfully applied Select-a-Seal gaskets in all tested joints with leak-free and damage-free performance.

Case Studies

- [Oil Filter Adapter - Rubber Edged Metal \(REM\)](#)
- [Water Pump - Rubber Coated Metal \(RCM\)](#)
- [Transmission Shift Tower - Beaded Fiber Gasket](#)
- [Transmission Oil Pan - Rubber-on-steel Overmolded Gasket](#)
- [Oil Pan Cover - Rubber Edged Metal \(REM\)](#)

Robustness and Durability as Measures of REC Gasket Effectiveness



We use the term Robustness to describe a seal's ability to perform acceptably in a wide range of circumstances, and the term Durability as the measure of how long a product seals without leaking under a certain set of expected-use conditions...