Environmental Testing

Fast Facts

- Accommodates multiple specimens or one large specimen measuring up to 16 feet wide x 8 feet high.
- Provides environmental conditioning for interiors from 50°F to 150°F and 25% to 100% RH, for exteriors from -25°F to 180°F and 15% to 100% RH (can ramp conditions between 180°F and -25°F in under 2.5 hours).
- Customizes environmentally tested configurations of wall systems up to 50 feet wide x 60 feet high.
- Uses high intensity IR lighting for simulated sunlight Heat Build Up.
- Simulates rainfall using spray racks.

Value

Fenestration products are exposed to daily and seasonal variations in air temperature and infrared radiation that can degrade performance. ATI provides standardized testing that exposes residential and commercial products to temperature cycling that simulates outdoor conditions, as well as to elevated temperatures that can cause performance problems or structural damage. Laboratory simulation of in-service conditions is used by designers and specifiers to evaluate the relative performance of fenestration products for a given application. The resulting data also show how extreme conditions impact air leakage, water penetration, and structural strength—information used to improve products.

Tested products typically include:
- Windows
- Louvers
- Skylights
- Doors
- Wall systems
- Gypsum
- Concrete barriers.
- much, much more...
Innovations

Measuring window air-water-structural performance, temperature cycling, and infrared radiation exposure can be complex and costly. To meet the specific test requirement, ATI draws upon our expertise in heat transfer, fluid mechanics, instrumentation, and apparatus design. We devised a large environmental chamber that can accommodate multiple specimens or one large specimen measuring up to 16 feet wide x 9 feet high. An array of temperature sensors is then used to ensure proper conditions are maintained.

Several test configurations can be employed while specimens undergo environmental exposure. Specimens can be installed in the test apparatus with the interior (room-side) of the product held at constant or variable temperature and humidity. The exterior (weather-side) of the product is then subjected to specific differential temperature extremes or temperature cycling. Another method includes a full room soak of the test specimen (i.e., contraction/expansion testing). ATI undertakes thorough performance characterizations before, during, and after temperature cycling to describe accurately any changes that occur. Some changes are transitory lasting only during a phase of testing; others are permanent due to irreversible damage to critical components that affect overall system performance.

Insights and Possibilities

Many variables impact the performance and service life of fenestration products and building materials. That’s why ATI offers a comprehensive range of laboratory, environmental, and field test programs. With ATI, you get the convenience of testing solar transmittance, thermal, durability, impact, and other performance parameters administered by one firm with facilities located on both coasts and the Midwest.

Our customers draw upon our expertise in over 1000 test methods performed in accordance with ASTM, AAMA, ANSI, military, and international standards, including ICC. And we continue to develop procedures and apply new test methods to meet customer requirements. For example, ATI developed the world’s largest solar calorimeter, which can measure the solar heat gain coefficient (SHGC) on specimens as large as 7 feet x 7 feet.

For more information on the value we can bring to your next project, visit www.archtest.com

The POWER In Performance Testing