SEALANT DURABILITY TESTING RESULTS

DURABILITY TESTING:

Three factors were considered when assessing the durability of the AeroBarrier sealant – flexing, aging, and compatibility of the material.

- **Flexing** is an important characteristic, because most joints within the building enclosure expand and contract due to changes in temperature and/or moisture, which requires that the sealant material accommodate that movement.
- **Aging** is very important for the building industry because some materials can break down over time due to leaching of plasticizers or other low-molecular-weight volatiles, causing them to embrittle.
- **Compatibility** is important with all building products because the sealant shouldn't chemically react with or leach into other building materials.

TEST METHODOLOGY:

- **Flexing**: The AeroBarrier material was aerosolized and deposited on a 1/8-inch-wide wood joint. The joint was designed such that it would contract by 20% at high temperature (180°F) and expand by 20% at low temperature (-30°F). These temperatures were chosen as the worst-case climatic extremes that could be experienced on a wall/roof assembly in North America (high temperature includes the effect of solar heating). The joint was cycled through this temperature range fifty times in an environmental chamber to simulate the worst-case full range of joint movement over a fifty-year period.

- **Aging**: The aging over that fifty-year period was simulated with an Arrhenius relationship to accelerate any chemical degradation in the material with temperature. During the fifty temperature cycles in the environmental chamber, the duration at the high temperature (180°F) was extended for each cycle to simulate the equivalent of fifty years of service life at the sealant's expected service temperature.

- **Sealing Performance**: The air permeance of the 1/8-inch-wide wood joint was measured before and after the flexing and aging conditioning described above (75 Pa pressure differential).

- **Compatibility:** The sealant was exposed to 41 different building materials that were then conditioned in a warm, humid environment (120°F/95% RH) for 10 days, followed by magnified inspection of the sealant-substrate interface.

TEST RESULTS:

Following the fifty cycles of flexing and accelerated aging, simulating a fifty-year period of service, the sealant showed no evidence of cracking, crazing, or spalling. Furthermore, the sealing performance was 0.13% leakage (very low) when compared to the open-joint condition (no sealant present). Finally, there was no discoloration and/or material breakdown at the sealant interface with the 41 common building products, indicating favorable compatibility.

Updated 05/2026