

SERVICE LIFE PREDICTION OF SEALANT MATERIALS

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To maximize energy efficiency and minimize infiltration in modern buildings, joints and openings are often filled with various types of polymeric sealant. While sealant is a critical component for building design and construction, is susceptible to damage from ultraviolet radiation, moisture, temperature changes, and applied mechanical loads. Studies have shown that 50% of commercial sealants fail within 10 years and 90% within 20 years. The test methods currently employed to assess the durability of these polymeric building materials rely on real time outdoor exposure or relative threshold testing. This presentation will focus on new approaches developed at NIST to assess service lives of polymeric products, and specifically, new test methods that allow for verified predictive models of sealant performance. The work presented is being supported by a NIST/industry consortium on sealant service life prediction and has been documented in the literature.^{1,2,3}

REFERENCES

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2. C.C. White, D.L. Hunston, K.T. Tan, "A Test Method for Monitoring Modulus Changes During Durability Tests on Building Joint Sealants", *ASTM STP 1545*, Andreas T. Wolf, Ed., ASTM International, 2012.
3. Christopher White, Kar Tean Tan, Emmett O'Brien, Hunston Donald, Joannie Chin, and R. Sam Williams "Design, Fabrication and Implementation of Thermally-Driven Outdoor Testing Devices for Building Joint Sealants", *Review of Scientific Instruments*, 82(2), 2011.