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Guide to Accelerated Conditioning Protocols for Durability Assessment of Internal and External Fiber-Reinforced Polymer (FRP) Reinforcement

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Fiber-reinforced polymer (FRP) composites, when designed, fabricated, and installed, provide a sustainable and durable reinforcement system for concrete. This document presents guidance for assessing the durability performance of internal and external FRP composite reinforcement using accelerated conditioning protocols (ACPs) in combination with standard test methods for mechanical properties. The objective of ACPs is to enable manufacturers to characterize the durability of their FRP composite products and encourage researchers and testing laboratories to adopt common test protocols to build a meaningful database of durability testing of FRP materials. Results of the tests conducted using the recommended ACPs are not intended to be used in the design of FRP composites as concrete reinforcement. In the future, however, when the relationship between field performance and ACPs is better understood, ACPs may be refined to allow use in quality control and design.

Keywords: accelerated conditioning; bond; durability; externally bonded; fiber-reinforced polymer composites; modulus of elasticity.

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