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### Highlights

Effect of weathering on fracture characteristics are analyzed by EWF tests.

Variation of S-N characteristics of weathering-induced PP-talc composites is analyzed.

Methodology of predicting fatigue lifetime considering progressive weathering is proposed.

### Abstract

Weathering-induced degradation causes a premature failure of polymeric materials in outdoor applications. In this study, the polypropylene and talc composites were degraded by accelerated and outdoor weathering. By comparing the degradation degree through the Fourier Transform-Infrared (FT-IR) analysis, the accelerated weathering factor was constructed. To investigate the effect of weathering on the short- and long-term mechanical properties, the

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