

**How durable are extruded wood-polymer composite (WPC) sidings with fire-retardants? -  
Reaction-to-fire performance of WPC before and after artificial weathering**

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Wood-polymer composites (WPC) are classified as normally flammable if they do not contain any fire-retardants. To improve the reaction-to-fire performance of WPC, several strategies can be used: bulk (mass) protection with fire-retardants (FR), pre-treatment of the wood particles with FR, and co-extrusion with FR only in the outer layer of the profile. In our research, co-extrusion was employed. Two coated ammonium polyphosphates were used as FR. High-density polyethylene was used as polymer matrix and wheat straw particles as filler. Artificial (xenon) weathering was performed over a duration of 28 days. The influence of weathering on the fire performance of co-extruded profiles was evaluated using a modified UL94-test, small burner test and cone calorimetry. In addition, mechanical and physical tests were performed with the fire-retarded, co-extruded profiles.

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