

## A FR Fire-Off with Polysilicic Acid for Pes/Co Blends

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**Abstract :** In this study, a novel polymeric flame retardant chemical with phosphorous-nitrogen synergism was synthesized by polyvinyl alcohol (PVA), hydrophilic polyester resin (PR), phosphoric acid and dicyandiamide (DCDA). Polyester/Cotton (Pes/Co) blend fabrics were treated via pad-dry-cure process with this synthesized chemical. PVA (PR)-P-DCDA has shown that it is an effective flame retardant on the fabrics. In order to improve durable flame retardancy for cotton part of the blend, polysilicic acid and citric acid monohydrate auxiliaries were added in FR finishing bath at different concentrations. Flammability and characteristic properties of the sample were tested according to relevant ISO standard and procedures. To do so, ISO 6940 vertical flammability test, TGA, DTA, LOI and FTIR analysis have been performed. The obtained results showed that this new finishing formulation is a good char-forming agent for the PES/CO blends and polysilicic acid could be used for cellulosic blends with PVA (PR)-P-DCDA.

**Keywords :** flame retardancy, flammability, Pes/Co blends, polysilicic acid

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