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Bridged DOPO Derivatives as Flame Retardants for PA6

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ABSTRACT

Two novel flame retardants, based on bridged 9,10-dihydro-9-oxa-10-phosphaphenanthrene-10-oxide (DOPO) were developed and evaluated as flame retardant (FR) additives in polyamide 6 (PA6) engineering plastics. The analytical evaluation of the newly developed FR/PA6 formulations indicates a good flame retardant behaviour of both bridged DOPO derivatives, achieving a V0 rating, at a thickness of 1 mm, in the UL94 vertical flammability test. Additionally, it was found that the bridged DOPO derivatives are primarily active in the gas-phase through flame inhibition as well as *via* increased melt-flow-drip FR mechanism.

Keywords: Flame retardant, bridged DOPO derivatives, polyamide 6, engineering plastics, thermal analysis, fire tests