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New Aromatic Polyamide with Azo and Phosphine Oxide Groups in the Main Chain

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Abstract: A new flame-retardant polyamide containing phosphine oxide and azobenzene moieties in the main chain was synthesized by the solution polycondensation reaction of 4,4`-azodibenzoic acid with bis (3-aminophenyl) phenyl phosphine oxide using thionyl chloride, N-methyl-2-pyrrolidone and pyridine. This new polymer was obtained in high yield (96%) and showed high inherent viscosity (0.55 dL/g) and was characterized by elemental analysis, FT-IR spectroscopy, thermal gravimetric analysis (TGA and DTG) and solubility test. Furthermore, another polyamide was prepared by solution polycondensation reaction of 4,4`-azodibenzoic acid with 1,4-phenylene diamine and its flame-retardant behavior was compared by the use of the LOI with the previous one.

Key Words: Flame-retardant polymers, phosphine oxide moieties, 4,4`-azodibenzoic acid

Keywords
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