

Acylation of Resorcinol with Pyromellitic Dianhydride

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Abstract—A procedure was developed for preparing resorcinolpyromellitein [3,3,7,7-tetrakis(4-hydroxy-2,2'-oxydiphenyl)pyromellitide] by acylation of resorcinol with pyromellitic dianhydride using tin tetrachloride as a catalyst (120–210°C, 30 h, reactant ratio pyromellitic dianhydride : SnCl₄ : resorcinol = 1.0 : 2.5 : 5.0). The structure of the target product was proved by elemental analysis, thin-layer chromatography, UV and IR spectroscopy, ¹H NMR spectroscopy, differential scanning calorimetry, and high-performance liquid chromatography with mass-spectrometric detection. The synthesized product exhibits increased hydrophilicity and imparts fluorescence properties to aqueous solutions when dissolved in a small amount (5×10^{-4} wt %), which allows it to be recommended as a chemical marker in tracer exploration of oil strata at oil fields.

Keywords: synthesis, acylation, resorcinol, pyromellitic dianhydride, tin tetrachloride, resorcinolpyromellitein

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