

# The Research of Dibutyltin Polymer on the Thermal Stability of PVC\*

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**Abstract**—A novel series of polymeric thermal stabilizers were synthesized by radical solution polymerization using dibutyltin maleate (DBTM), styrene (St) as main comonomers, methyl acrylate (MA), *N*-phenylmaleimide (NPMI), *N*-*p*-chlorophenylmaleimide (NCPMI), *N*-(4-nitrophenyl)maleimide (NNOPMI) as modified monomers, respectively, and AIBN as the initiator, namely P(DBTM/St), P(DBTM/St/MA), P(DBTM/St/NPMI), P(DBTM/St/NCPMI), and P(DBTM/St/NNOPMI). The structures were characterized by FTIR and <sup>1</sup>H NMR spectra. The molecular weight and its distribution were measured with GPC. The dynamic stability was studied by the measure of hydrogen chloride from PVC, which were added into quantitative thermal stabilizers before processing. The depressant effects of thermal stabilizers were researched on discoloration due to degradation with thermal aging method. The parameters of thermal degradation dynamics were calculated by the Kissinger method. The effect order of the five stabilizers on thermal stability was P(DBTM/St/MA) > P(DBTM/St) > P(DBTM/St/NPMI) > P(DBTM/St/NCPMI) > (DBTM/St/NNOPMI).

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