

Structure and properties of polyether polyurethaneurea  
elastomers having the aromatic diamine chain extenders(2)  
-thermal and mechanical properties

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Polyether polyurethaneurea(PEUU) elastomers based on PTMG / MDI / diamine were synthesized. The effect of the hard segment structure, hard segment content and block length on the thermal and mechanical properties of PEUU elastomers was studied. According to the TG/DTA analyses, as-cast PEUU elastomers showed 2-step degradation behaviors at a heating rate of 20°C/min. in Nitrogen atmosphere. Initial degradation temperature was closely related with hard segment content and ordering, which was suggested by the results that hard segment was mostly degraded in the first step and higher phase-mixed sample was degraded in the lower temperature. The mechanical properties depended primarily on the hard segment content, that is, samples with higher hard segment content exhibited higher ultimate stress, modulus and stress hysteresis, while elongation at break was lower. The storage modulus in the DMA tests was in the order of PPD > MPD > DAM series, which was probably due to the difference of chain rigidity of hard segment.