In this study, wool fabrics having temperature sensitive shape memory effect were fabricated by using a functional finishing treatment, shape-memory-polyurethanes (SMPU). The contribution of SMPU treatment on bagging recovery of wool fabric, crucial for its end use performance, was investigated by a test procedure including hot water conditions simulating laundry of garments. Characterization of the treated fabric was conducted by FT-IR and SEM analyses and effect of finishing on hand characteristics was investigated by bending rigidity test. FT-IR spectra and SEM images confirmed the existence of SMPU polymer on wool fabric. SMPU treatment significantly increased weight and rigidity of the fabrics as expected. Most notably, SMPU treated wool fabric samples exhibited excellent temperature sensitive bagging recovery when compared to raw and commercial polyurethane treated fabric.