

## **Rheology of Olefinic Elastomers and TPO's**

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Several ethylene-octene elastomers with comonomer content varying from 17 to 45 wt% have been characterized for nonlinear viscoelasticity and elongational viscosity in the melt. The results of solution NMR tests confirmed that these elastomers have a polyethylene backbone with predominantly short side chains – much shorter than the entanglement molecular weight. The strain hardening behavior of these melts has been studied over a range of strain rates with the help of two different axisymmetric semi-hyperboloidal dies; this behavior is found to correlate with the density of short chain branches. However, unlike long chain branched polyethylene melts, these elastomers show less strain hardening at higher strain rates. The implications of these trends for strain recovery of elastomers in thermoplastic olefins or blends of polypropylene with such elastomers, are discussed.