CLAIMS

What is claimed is:

1. A bimodal polyethylene copolymer comprising a lower molecular weight (LMW) component and a higher molecular weight (HMW) component, the copolymer having a z-average molecular weight (M_z) of from about 1,000 kg/mol to about 2,500 kg/mol, a weight fraction of the LMW component (LMW fr.) of from about 0.60 to 0.85, a ratio of a weight average molecular weight (M_w) of the HMW component (HMW M_w) to a M_w of the LMW component (LMW M_w) of from about 14 to about 25, a zero shear viscosity (η_0) of from about 5×10^5Pa-s to about 1×10^7 Pa-s and a HMW M_w of from about 800 kg/mol to about 1,500 kg/mol, wherein the copolymer is prepared using a residence time in a polymerization reactor of equal to or greater than about 30 minutes.

2. The copolymer of claim 1 having a processability characterized by a pressure index of greater than about ($1.1\times\eta_{100}+50$) and a bubble stability index of less than about ($0.96\times(\eta_0/10000)-15$), wherein η_{100} is the viscosity of the copolymer expressed in Pas and measured at 190° C. and a shear rate of 100 rad/s.

3. The copolymer of claim 2 wherein the pressure index is defined by following equation: pressure index=$5737-563*(\text{HMW } M_w/\text{LMW } M_w)-209*(\text{HMW fr.}/\text{LMW fr.})+7*M_z-1234*M_z/M_w+404*(\text{HMW } M_w/\text{LMW } M_w*\text{HMW fr.}/\text{LMW fr.})-0.22*(\text{HMW } M_w/\text{LMW } M_w*M_z)+139*(\text{HMW } M_w/\text{LMW } M_w*M_z/M_w)+2*(\text{HMW fr.}/\text{LMW fr.}*M_z)-1591*(\text{HMW fr.}/\text{LMW fr.}*M_z/M_w)-0.64*(M_z*M_z/M_w)$, wherein HMW fr. is a weight fraction of the HMW component.

4. The copolymer of claim 2 wherein the bubble stability index is defined by following equation: bubble stability index=$1.31\times10^4-2.76\times10^3*(\text{HMW } M_w/\text{LMW } M_w)-1.46\times10^5*(\text{HMW fr.}/\text{LMW fr.})+4.16\times10^2*M_z-2.43\times10^4*M_z/M_w$.

5. The copolymer of claim 1 comprising an alpha olefin comonomer.

6. The copolymer of claim 5 wherein the alpha olefin comonomer comprises 1-hexene.

7. The copolymer of claim 1 having a M_w from about 200 kg/mol to 600 kg/mol.

8. The copolymer of claim 1 having a M_z/M_w ratio from about 4 to about 8.

9. The copolymer of claim 1 having a M_w/M_n ratio of from about 10 to about 25.

10. The copolymer of claim 1 wherein the LMW component has a weight average molecular weight of from about 40 kg/mol to about 80 kg/mol.

11. The copolymer of claim 1 wherein the HMW component has a weight average molecular weight of from about 1,000 kg/mol to about 1,450 kg/mol.

12. The copolymer of claim 1 which when tested in accordance with ASTM D1238 has a high load melt index ($I_{21.6}$) of from about 8 g/10 min to about 30 g/10 min.

13. The copolymer of claim 1 which when tested in accordance with ASTM D1505 has a density of from about 0.930 glee to about 0,950 g/cc.

14. The copolymer of claim 1 having a η_{100} of from about 1,000 Pa-s to about 2,500 Pa-s.

15. The copolymer of claim 1 having a number average molecular weight (M_n) of from about 15 kg/mol to about 30 kg/mol.

16. The copolymer of claim 1 having a HMW fr./LMW fr. ratio of from about 0.20 to about 0.50, wherein HMW fr. is a weight fraction of the HMW component.

17. The copolymer of claim 1 which when tested in accordance with ASTM D1709 has a dart drop strength ranging from about 100 g to about 450 g.

18. The copolymer of claim 1 which when tested in accordance with ASTM D1922 has an Elmendorf tear strength in the machine direction ranging from about 25 g to about 75 g.

19. The copolymer of claim 1 which when tested in accordance with ASTM D1922 has an Elmendorf tear strength in the transverse direction ranging from about 300 g to about 500 g.

20. A film made from the copolymer of claim 1.

21. A food packaging comprising the film of claim 20.