CLAIMS

1. An ethylene-based polymer comprising polymerized units derived from ethylene, diene, and optionally one or more C_3–C_{12} α-olefins, wherein the ethylene-based polymer comprises:

   a melt strength (MS) > -17 * log (MI) + 25, wherein MS is the melt strength in cN (Rheotens device, 190°C, 2.4 mm/s^2, 120 mm from the die exit to the center of the wheels, extrusion rate of 38.2 s^{-1}, capillary die of 30 mm length, 2 mm diameter and 180° entrance angle) and MI is the melt index in g/10min according to ASTM D1238; and

   an average g’ is greater than 0.70, where the average g' is an intrinsic viscosity ratio determined by gel permeation chromatography using a triple detector.

2. The ethylene-based polymer of claim 1, wherein the diene is unconjugated.

~~3. The ethylene-based polymer of claim 2, wherein the diene is acyclic.~~

~~4~~3. The ethylene-based polymer of claim ~~3~~2, wherein the diene comprises 1,4-pentadiene, 1,5-hexadiene, 1,6-heptadiene, 1,7-octadiene, 1,8-nonadiene, 1,9-decadiene, 1,10-undecadiene, 1,11-dodecadiene, dimethyldivinylsilane, dimethyldiallylsilane, dimethylallylvinylsilane.

~~5~~4. The ethylene-based polymer of any preceding claim, wherein the ethylene-based polymer comprises a low molecular weight polymer fraction and a high molecular weight polymer fraction, wherein the low molecular weight polymer fraction and the high molecular weight polymer fraction each comprise polymerized units derived from ethylene, diene, and one or more C_3–C_{12} α-olefins.

~~6~~5. The ethylene-based polymer of any preceding claim, wherein the second molecular weight polymer fraction comprises 0.5 to 30 % by weight of the polymer.

~~7~~6. The ethylene-based polymer of claim ~~6~~5, wherein the second molecular weight polymer fraction comprises between 1 and 15 % by weight of the polymer.

~~8~~7. The ethylene-based polymer of any preceding claim, wherein the MI is greater than 0.1, wherein MI is the melt index in g/10min according to ASTM D1238.

~~9. The ethylene-based polymer of claim 8, wherein the MI is from 0.1 to 5.0, wherein MI is the melt index in g/10min according to ASTM D1238.~~

~~10. The ethylene-based polymer of claim 9, wherein the MI is from 0.3 to 3.0, wherein MI is the melt index in g/10min according to ASTM D1238.~~

~~11~~8. The ethylene-based polymer of any preceding claim, wherein the MS is greater than 45 cN.

~~12. The ethylene-based polymer of claim 11, wherein the MS is greater than 50 cN.~~

~~13~~9. The ethylene-based polymer of claim ~~8~~7, wherein the MI is greater than 1, wherein MI is the melt index in g/10min according to ASTM D1238.

~~14. The ethylene-based polymer of claim 13, wherein the MI is greater than 2, wherein MI is the melt index in g/10min according to ASTM D1238.~~

~~15. The ethylene-based polymer of claim 14, wherein the MI is greater than 3, wherein MI is the melt index in g/10min according to ASTM D1238.~~

~~16~~10. The ethylene-based polymer of any preceding claim, wherein MS > -17 * log (MI) + 30.

~~17~~11. The ethylene-based polymer of claim ~~16~~10, wherein MS > -17 * log (MI) + 35.

~~18~~12. The ethylene-based polymer of any preceding claim, wherein the ethylene-based polymer has an average g' is greater than 0.86, where the average g' is an intrinsic viscosity ratio determined by gel permeation chromatography using a triple detector.

~~19~~13. The ethylene-based polymer of claim ~~18~~12, wherein the average g' is greater than 0.88.

~~20. The ethylene-based polymer of claim 19, wherein the average g' is greater than 0.90.~~

~~21~~14. The ethylene-based polymer of any preceding claim, wherein the ethylene-based polymer has a weight averaged molecular weight (M_w) of less than or equal to 250,000 Daltons, as determined by absolute gel permeation chromatography.

~~22. The ethylene-based polymer of claim 21, wherein the ethylene-based polymer has a weight averaged molecular weight (M_w) of less than or equal to 150,000 Daltons, as determined by absolute gel permeation chromatography.~~

~~23. The ethylene-based polymer of claim 22, wherein the ethylene-based polymer has a weight averaged molecular weight (M_w) of less than or equal to 100,000 Daltons, as determined by absolute gel permeation chromatography.~~

~~24~~15. The ethylene-based polymer of any preceding claim, wherein the ethylene-based polymer has a molecular weight tail quantified by an MWD area metric, A_{TAIL}, and A_{TAIL} is greater than 0.08 as determined by gel permeation chromatography using a triple detector.

~~25. The ethylene-based polymer of claim 24, wherein the A_{TAIL} is greater than 0.10.~~