

What is claimed is:

1. A bimodal linear low density polyethylene copolymer comprising:
a density from 0.8900 to 0.9300 gram per cubic centimeter (g/cm^3) measured according to ASTM D792-13, Method B;
a melt index (I_2) from 0.1 grams per 10 minutes (g/10 min.) to 5 g/10 min. , measured according to the Melt Index Test Method at 190 °C and 2.16 kilograms according to ASTM D1238-13;
a M_z from 600,000 to 1,200,000 grams per mole (g/mol), measured according to a Gel Permeation Chromatography (GPC) Test Method; and
a hexane extractables content present in a value of up to 2.6 wt.% as measured according to ASTM D-5227:95.
2. The bimodal linear low density polyethylene copolymer of claim 1 having a melt flow ratio (I_2/I_1) from 25 to 65, measured according to the Flow Index Test Method and the Melt Index Test Method at 190 °C and 21.6 and 2.16 kilograms, respectively, according to ASTM D1238-13.
3. The bimodal linear low density polyethylene copolymer of claim 2 having a melt flow ratio (I_2/I_1) from 30 to 50, measured according to the Flow Index Test Method and the Melt Index Test Method at 190 °C and 21.6 and 2.16 kilograms, respectively, according to ASTM D1238-13.
4. The bimodal linear low density polyethylene copolymer of any one of claims 1-3 having a first molecular weight ratio (M_z/M_w) from 3.5 to 5.5, measured according to the GPC Test Method, wherein M_z is z-average molecular weight and M_w is weight-average molecular weight.
5. The bimodal linear low density polyethylene copolymer of any one of claims 1-4, wherein the I_2 is from 0.3 g/10 min. to 0.9 g/10 min. , measured according to the Melt Index Test Method at 190 °C and 2.16 kilograms according to ASTM D1238-13; and

wherein the density is from 0.9100 to 0.9200 g/cm³ measured according to ASTM D792-13, Method B.

6. The bimodal linear low density polyethylene copolymer of any one of claims 1-5 having a tan δ (tan δ) from 3 to 6, measured at 190 °C and a frequency of 0.1000 radians per second (rad/s) according to Tan Delta Test Method.

7. The bimodal linear low density polyethylene copolymer of claim 1 having:
a tan δ is from 5.8 to 6.2, measured at 190 °C and a frequency of 0.1000 radians per second (rad/s) according to Tan Delta Test Method;
the density is from 0.9160 to 0.9190 g/cm³ measured according to ASTM D792-13, Method B;
the M_z/M_w is 4.9 to 5.2, measured according to the GPC Test Method;
the melt index (I_2) from 0.8 grams per 10 minutes (g/10 min.) to 0.9 g/10 min.,
measured according to the Melt Index Test Method at 190 °C and
2.16 kilograms according to ASTM D1238-13; and
a melt flow ratio (I_2/I_1) from 40 to 50, measured according to the Flow Index
Test Method and the Melt Index Test Method at 190 °C and 21.6 and 2.16
kilograms, respectively, according to ASTM D1238-13.

8. The bimodal linear low density polyethylene copolymer of claim 1 having:
a tan δ is from 2.8 to 3.2, measured at 190 °C and a frequency of 0.1000 radians per second (rad/s) according to Tan Delta Test Method;
the density is from 0.9160 to 0.9190 g/cm³ measured according to ASTM D792-13, Method B;
the M_z/M_w is 3.8 to 4.4, measured according to the GPC Test Method;
the melt index (I_2) from 0.3 grams per 10 minutes (g/10 min.) to 0.4 g/10 min.,
measured according to the Melt Index Test Method at 190 °C and
2.16 kilograms according to ASTM D1238-13; and

a melt flow ratio (I_{21}/I_2) from 30 to 35, measured according to the Flow Index Test Method and the Melt Index Test Method at 190 °C and 21.6 and 2.16 kilograms, respectively, according to ASTM D1238-13.

9. The bimodal linear low density polyethylene copolymer of any one of claims 1-8 having a flow index ratio (I_{21}/I_5) from 5 to 20, measured according to the Flow Index Test Method and the Flow Rate Test Method at 190 °C and 21.6 and 5.0 kilograms, respectively, according to ASTM D1238-13.
10. The bimodal linear low density polyethylene copolymer of any one of claims 1-9, wherein a number of short chain branches per 1000 carbon atoms measured according to the GCP Test Method is greater at Mw than at Mn.
11. The bimodal linear low density polyethylene copolymer of claim 10, where the SCB per 1000 C is 20 to 110 percent greater at Mw than at Mn.
12. The bimodal linear low density polyethylene copolymer of any one of claims 1-11 wherein a comonomer used in forming the bimodal linear low density polyethylene copolymer is selected from 1-hexene, 1-butene or a combination thereof.
13. A manufactured article comprising a shaped form of the bimodal linear low density polyethylene copolymer of any one of claims 1-12.
14. A film formed from the bimodal linear low density polyethylene copolymer of any one of claims 1 to 12.
15. The film of claim 13, wherein the film produced solely of the bimodal linear low density polyethylene copolymer having a thickness of 25.4 micrometer (1 thousandth of an inch) has an average dart impact resistance of 900 grams (g) to 1300 g as measured according to ASTM D1709 16a.
16. The film of any one of claims 14-15, wherein the film has a normalized cross direction Elmendorf tear of 600 to 900 gf measured according to ASTM D1922-09, Standard

Test Methods for Propagation Tear Resistance of Plastic Film and Thin Sheeting by Pendulum Method, Type B constant radius.

17. The film of any one of claims 14-16, wherein the film having a thickness of 25 micrometer has an Elmendorf Tear Ratio (MD/CD) of 0.3 to 0.4, wherein a normalized tear in a cross direction (CD) and a machine direction are measured according to ASTM D 1922-09, *Standard Test Methods for Propagation Tear Resistance of Plastic Film and Thin Sheeting by Pendulum Method*, Type B (constant radius).

18. The film according to any one of claims 14-17, wherein the film is for packaging of food products.

19. A process for producing the film according to any one of claims 14-18, comprising casting or blow extruding.

20. A method of making the bimodal linear low density polyethylene copolymer of any one of claims 1-12, the method comprising contacting ethylene ("C₂") and a comonomer ("C_X") selected from 1-butene (C_X = C₄), 1-hexene (C_X = C₆), or both (C_X = C₄ and C₆) at a comonomer-to-ethylene (C_X/C₂) molar ratio of 0.005 to 0.30 with a bimodal catalyst system comprising a (1,3-dimethyl-tetrahydroindenyl)(methylcyclopentadienyl) zirconium complex and a bis(2-pentamethylphenylamido)ethyl)amine zirconium complex in the presence of molecular hydrogen gas (H₂) at a hydrogen-to-ethylene (H₂/C₂) molar ratio from 0.001 to less than 0.030, all in a single gas phase polymerization reactor containing a fluidized resin bed at a temperature from 70 °C to 90 °C, thereby making the bimodal linear low density polyethylene copolymer.

21. The method of claim 20, wherein the H₂/C₂ molar ratio is from 0.006 to 0.015.

22. The method of any one of claims 20-21, wherein the bimodal catalyst system comprises a metallocene catalyst other than a (1,3-dimethyl-tetrahydroindenyl)(methylcyclopentadienyl)zirconium complex.