CLAIMS

1. A bimodal polyethylene composition having:

a density (ρ) from 0.952 g/cm^3 to 0.957 g/cm^3 when measured according to ASTM D792-08, Method B;

a high load melt index (I_{21}) from 1.0 to 10 dg/min when measured according to ASTM D1238 at 190 °C and a 21.6 kg load;

a peak molecular weight ($M_{p(GPC)}$) defined by the equation: $M_{p(GPC)} < -2{,}805.3 \times MWD + 102{,}688$, wherein MWD is a molecular weight distribution defined by the equation: $MWD = M_{w(GPC)} / M_{n(GPC)}$, $M_{w(GPC)}$ is a weight average molecular weight of the bimodal polymer composition, and $M_{n(GPC)}$ is a number average molecular weight of the bimodal polymer composition, and wherein $M_{p(GPC)}$, $M_{w(GPC)}$, and $M_{n(GPC)}$ are measured using gel permeation chromatography (GPC), wherein the $M_{n(GPC)}$ is greater than 28,000 g/mol;

a z-average molecular weight ($M_{z(GPC)}$) greater than 3,200,000 to 5,000,000 g/mol as measured using GPC; and

a ratio of the ($M_{z(GPC)}$) to the $M_{w(GPC)}$ is from 8.5 to 10.5.

2. The bimodal polyethylene composition of claim 1, wherein the bimodal polyethylene composition is a polymerized reaction product of an ethylene monomer and at least one C_3-C_{12} α-olefin comonomer.

~~3. The bimodal polyethylene composition of any one of claims 1 and 2, wherein the $M_{n(GPC)}$ is greater than 28,000 g/mol.~~

~~4~~3. The bimodal polyethylene composition of any one of claims 1 to ~~3~~2, wherein the $M_{w(GPC)}$ is greater than 380,000 g/mol.

~~5~~4. The bimodal polyethylene composition of any one of claims 1 to ~~4~~3 having:

a secant modulus (E_s) defined by the equation: $E_s > -2{,}622 + 2{,}822 \times \rho + 2.5 \times MFR_5$, wherein MFR_5 is a ratio of the high load melt index (I_{21}) to a melt index (I_5) of the bimodal polyethylene composition measured according to ASTM D1238 at 190 °C and a 5.0 kg load;

a secant modulus (E_s) defined by the equation: $E_s > -4{,}570.6 + 4{,}883 \times \rho + 3.1 \times MWD$; or both.

~~6~~5. The bimodal polyethylene composition of any one of claims 1 to ~~5~~4, wherein the $M_{w(GPC)}$ is from 380,000 g/mol to 500,000 g/mol.

67. The bimodal polyethylene composition of any one of claims 1 to 65, wherein the MFR_5 is from 20 to 32, wherein MFR_5 is a ratio of the high load melt index (I_{21}) to a melt index (I_5) of the bimodal polyethylene composition measured according to ASTM D1238 at 190 °C and a 5.0 kg load.

78. The bimodal polyethylene composition of any one of claims 1 to 76, wherein the $M_{n(GPC)}$ is from 28,000 g/mol to 40,000 g/mol.

98. The bimodal polyethylene composition of any one of claims 1 to 87, wherein the $M_{p(GPC)}$ is from 55,000 g/mol to 65,000 g/mol.

109. The bimodal polyethylene composition of any one of claims 1 to 98, wherein a secant modulus (E_s) of the bimodal polyethylene composition is greater than 965 MPa

101. The bimodal polyethylene composition of any one of claims 1 to 10 9 having an environmental stress-cracking resistance F_{50} greater than 150 hours when measured according to ASTM D1693, Procedure B, 10% Igepal.

112. An article manufactured using the bimodal polyethylene composition of any one of claims 1 to 101.

1312. The article of claim 1211, wherein the article is a blow molded article.

1413. A method for producing the bimodal polyethylene composition of any one of claims 1 to 1112, comprising polymerizing via gas-phase polymerization ethylene and at least one C_3-C_{12} α-olefin comonomer in the presence of a main catalyst and a trim catalyst in a single reactor to produce the bimodal polyethylene composition.