CLAIMS

1. A bottle closure assembly comprising:

an integrally molded: cap portion, elongated tether portion, and retaining means portion; the cap portion being molded to reversibly engage and cover a bottle opening, the retaining means portion being molded to irreversibly engage a bottle neck or an upper portion of a bottle, and the elongated tether portion being molded to connect at least one point on the cap portion to at least one point on the retaining means portion; wherein the integrally molded: cap portion, elongated tether, portion and retaining means portion are made from a polyethylene composition comprising:

(1) 10 to 70 wt.% of a first ethylene copolymer having a melt index I_2, of less than 1.0 g/10min; and a density of from 0.920 to 0.960 g/cm^3; and

(2) 90 to 30 wt.% of a second ethylene copolymer or an ethylene homopolymer; the second ethylene copolymer or the ethylene homopolymer having a melt index I_2, of at least 20 g/10min; and a density higher than the density of the first ethylene copolymer, but less than 0.970 g/cm^3;

wherein:

the ratio (SCB1/SCB2) of the number of short chain branches per thousand carbon atoms in the first ethylene copolymer (SCB1) to the number of short chain branches per thousand carbon atoms in the second ethylene copolymer (SCB2) is greater than 0.5; and

the polyethylene composition has a tensile elongation at break of at least 600 percent and a tensile strength at break of at least 20 MPa.

2. A bottle closure assembly comprising:

an integrally molded: cap portion, elongated tether portion, and retaining collar portion; the cap portion being molded to reversibly engage and cover a bottle opening, the retaining collar portion being molded to irreversibly engage a bottle neck or an upper portion of a bottle, and the elongated tether portion being molded to connect at least one point on the cap portion to at least one point on the retaining collar portion; wherein the integrally molded: cap portion, elongated tether portion, and retaining collar portion are made from a polyethylene composition comprising:

(1) 10 to 70 wt.% of a first ethylene copolymer having a melt index I_2, of less than 1.0 g/10min; and a density of from 0.920 to 0.960 g/cm^3; and

(2) 90 to 30 wt.% of a second ethylene copolymer or an ethylene homopolymer; the second ethylene copolymer or the ethylene homopolymer having a melt index I_2, of at least 20 g/10min; and a density higher than the density of the first ethylene copolymer, but less than 0.970 g/cm^3;

wherein:

the ratio (SCB1/SCB2) of the number of short chain branches per thousand carbon atoms in the first ethylene copolymer (SCB1) to the number of short chain branches per thousand carbon atoms in the second ethylene copolymer (SCB2) is greater than 0.5; and

the polyethylene composition has a tensile elongation at break of at least 600 percent and a tensile strength at break of at least 20 MPa.

3. A bottle closure assembly comprising:

a closure portion, an elongated tether portion, and a retaining collar portion,

the closure portion being molded to reversibly engage and cover a bottle opening, the elongated tether portion comprising a tether strip which is frangibly connected along a portion of its upper edge to a descending annular edge of the closure portion and which is frangibly connected along a portion of its lower edge to an upper annular edge of the retaining collar portion, the tether strip being integrally formed with and connected at one end to at least one point on the closure portion and integrally formed with and connected at another end to at least one point on the retaining collar portion, the frangible sections being breakable when the closure portion is removed from a bottle opening, but where the closure portion remains connected to the retaining collar portion via the tether strip; wherein the cap portion, the elongated tether portion, and the retaining collar portion are integrally molded from a polyethylene composition comprising:

(1) 10 to 70 wt.% of a first ethylene copolymer having a melt index I_2, of less than 1.0 g/10min; and a density of from 0.920 to 0.960 g/cm^3; and

(2) 90 to 30 wt.% of a second ethylene copolymer or an ethylene homopolymer; the second ethylene copolymer or the ethylene homopolymer having a melt index I_2, of at least 20 g/10min; and a density higher than the density of the first ethylene copolymer, but less than 0.970 g/cm^3;

wherein:

the ratio (SCB1/SCB2) of the number of short chain branches per thousand carbon atoms in the first ethylene copolymer (SCB1) to the number of short chain

branches per thousand carbon atoms in the second ethylene copolymer (SCB2) is greater than 0.5; and

the polyethylene composition has a tensile elongation at break of at least 600 percent and a tensile strength at break of at least 20 MPa.

4. The bottle closure assembly of claim 1, wherein the polyethylene composition is bimodal and comprises:

(1) 10 to 70 wt% of a first ethylene copolymer having a melt index I_2, of less than 0.4 g/10min; a molecular weight distribution, M_w/M_n, of less than 3.0; and a density of from 0.920 to 0.955 g/cm^3; and

(2) 90 to 30 wt% of a second ethylene copolymer having a melt index I_2, of from 100 to 10,000 g/10min; a molecular weight distribution, M_w/M_n, of less than 3.0; and a density higher than the density of said first ethylene copolymer, but less than 0.967 g/cm^3;

wherein the density of said second ethylene copolymer is less than 0.037 g/cm^3 higher than the density of said first ethylene copolymer; the ratio (SCB1/SCB2) of the number of short chain branches per thousand carbon atoms in said first ethylene copolymer (SCB1) to the number of short chain branches per thousand carbon atoms in said second ethylene copolymer (SCB2) is greater than 0.5; and wherein said polyethylene composition has a molecular weight distribution, M_w/M_n, of from 3 to 11; a density of at least 0.949 g/cm^3; a melt index I_2, of from 0.4 to 5.0 g/10 min; an M_Z of less than 400,000; a stress exponent of less than 1.50; and an ESCR Condition B (10% IGEPAL) of at least 20 hrs.

5. The bottle closure assembly of claim 2, wherein the polyethylene composition is bimodal and comprises:

(1) 10 to 70 wt% of a first ethylene copolymer having a melt index I_2, of less than 0.4 g/10min; a molecular weight distribution, M_w/M_n, of less than 3.0; and a density of from 0.920 to 0.955 g/cm^3; and

(2) 90 to 30 wt% of a second ethylene copolymer having a melt index I_2, of from 100 to 10,000 g/10min; a molecular weight distribution, M_w/M_n, of less than 3.0; and a density higher than the density of said first ethylene copolymer, but less than 0.967 g/cm^3;

wherein the density of said second ethylene copolymer is less than 0.037 g/cm^3 higher than the density of said first ethylene copolymer; the ratio (SCB1/SCB2) of the number of short chain

branches per thousand carbon atoms in said first ethylene copolymer (SCB1) to the number of short chain branches per thousand carbon atoms in said second ethylene copolymer (SCB2) is greater than 0.5; and wherein said polyethylene composition has a molecular weight distribution, M_w/M_n, of from 3 to 11; a density of at least 0.949 g/cm^3; a melt index $I_{2,}$ of from 0.4 to 5.0 g/10 min; an M_Z of less than 400,000; a stress exponent of less than 1.50; and an ESCR Condition B (10% IGEPAL) of at least 20 hrs.

6. The bottle closure assembly of claim 3, wherein the polyethylene composition is bimodal and comprises:

(1) 10 to 70 wt% of a first ethylene copolymer having a melt index I_2, of less than 0.4 g/10min; a molecular weight distribution, M_w/M_n, of less than 3.0; and a density of from 0.920 to 0.955 g/cm^3; and

(2) 90 to 30 wt% of a second ethylene copolymer having a melt index I_2, of from 100 to 10,000 g/10min; a molecular weight distribution, M_w/M_n, of less than 3.0; and a density higher than the density of said first ethylene copolymer, but less than 0.967 g/cm^3;

wherein the density of said second ethylene copolymer is less than 0.037 g/cm^3 higher than the density of said first ethylene copolymer; the ratio (SCB1/SCB2) of the number of short chain branches per thousand carbon atoms in said first ethylene copolymer (SCB1) to the number of short chain branches per thousand carbon atoms in said second ethylene copolymer (SCB2) is greater than 0.5; and wherein said polyethylene composition has a molecular weight distribution, M_w/M_n, of from 3 to 11; a density of at least 0.949 g/cm^3; a melt index $I_{2,}$ of from 0.4 to 5.0 g/10 min; an M_Z of less than 400,000; a stress exponent of less than 1.50; and an ESCR Condition B (10% IGEPAL) of at least 20 hrs.