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 10 g/10min or less; and a density of from 0.920 to 0.960 g/cm^3; and

(2) 90 to 30 wt.% of a second ethylene copolymer having a melt index I_2, of at least 50 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.

2. The bottle closure assembly of claim 1, wherein the first and second ethylene copolymer comprise polymerized ethylene and at least one polymerized alpha-olefin comonomer, wherein the polymerized ethylene is the majority species.

3. The bottle closure assembly of claim 1, wherein the polyethylene composition comprises:

(1) 10 to 70 wt.% of a first ethylene copolymer having a melt index I_2, of from 0.1 to 10 g/10min; a molecular weight distribution M_w/M_n, of less than 3.0; and a density of from 0.930 to 0.960 g/cm^3; and

(2) 90 to 30 wt.% of a second ethylene copolymer having a melt index I_2, of from 50 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 the first ethylene copolymer, but less than 0.966 g/cm^3;

wherein the density of the second ethylene copolymer is less than 0.037 g/cm^3 higher than the density of the first ethylene copolymer; 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 1.0; and

wherein the polyethylene composition has a molecular weight distribution M_w/M_n, of from 2 to 7; a density of at least 0.950 g/cm^3; a high load melt index I_{21}, of from 150 to 400 g/10min; a Z-average molecular weight M_Z, of less than 300,000; a melt flow ratio I_{21}/I_2, of from 22 to 50; a stress exponent of less than 1.40; and an ESCR Condition B (100% IGEPAL® CO-630) of at least 3.5 hrs.

4. 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 10 g/10min or less; and a density of from 0.920 to 0.960 g/cm^3; and

(2) 90 to 30 wt.% of a second ethylene copolymer having a melt index I_2, of at least 50 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.

5. The bottle closure assembly of claim 4, wherein the first and second ethylene copolymer comprise polymerized ethylene and at least one polymerized alpha-olefin comonomer, wherein the polymerized ethylene is the majority species.

6. The bottle closure assembly of claim 4, wherein the polyethylene composition comprises:

(1) 10 to 70 wt.% of a first ethylene copolymer having a melt index I_2, of from 0.1 to 10 g/10min; a molecular weight distribution M_w/M_n, of less than 3.0; and a density of from 0.930 to 0.960 g/cm^3; and

(2) 90 to 30 wt.% of a second ethylene copolymer having a melt index I_2, of from 50 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 the first ethylene copolymer, but less than 0.966 g/cm^3;

wherein the density of the second ethylene copolymer is less than 0.037 g/cm^3 higher than the density of the first ethylene copolymer; 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 1.0; and

wherein the polyethylene composition has a molecular weight distribution M_w/M_n, of from 2 to 7; a density of at least 0.950 g/cm^3; a high load melt

index I_{21}, of from 150 to 400 g/10min; a Z-average molecular weight M_Z, of less than 300,000; a melt flow ratio I_{21}/I_2, of from 22 to 50; a stress exponent of less than 1.40; and an ESCR Condition B (100% IGEPAL® CO-630) of at least 3.5 hrs.

7. 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 connections 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 closure 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 10 g/10min or less; and a density of from 0.920 to 0.960 g/cm^3; and

(2) 90 to 30 wt.% of a second ethylene copolymer having a melt index I_2, of at least 50 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.

8. The bottle closure assembly of claim 7, wherein the first and second ethylene copolymer comprise polymerized ethylene and at least one polymerized alpha-olefin comonomer, wherein the polymerized ethylene is the majority species.

9. The bottle closure assembly of claim 7, wherein the polyethylene composition comprises:

(1) 10 to 70 wt.% of a first ethylene copolymer having a melt index I_2, of from 0.1 to 10 g/10min; a molecular weight distribution M_w/M_n, of less than 3.0; and a density of from 0.930 to 0.960 g/cm^3; and

(2) 90 to 30 wt.% of a second ethylene copolymer having a melt index I_2, of from 50 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 the first ethylene copolymer, but less than 0.966 g/cm^3;

wherein the density of the second ethylene copolymer is less than 0.037 g/cm^3 higher than the density of the first ethylene copolymer; 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 1.0; and

wherein the polyethylene composition has a molecular weight distribution M_w/M_n, of from 2 to 7; a density of at least 0.950 g/cm^3; a high load melt index I_{21}, of from 150 to 400 g/10min; a Z-average molecular weight M_Z, of less than 300,000; a melt flow ratio I_{21}/I_2, of from 22 to 50; a stress exponent of less than 1.40; and an ESCR Condition B (100% IGEPAL® CO-630) of at least 3.5 hrs.