



US 20120184668A1

(19) **United States**(12) **Patent Application Publication**
Stack et al.(10) **Pub. No.: US 2012/0184668 A1**(43) **Pub. Date: Jul. 19, 2012**(54) **CLEAR TERNARY BLENDS OF
POLYCARBONATE WITH AN ALIPHATIC
POLYESTER AND AN
AROMATIC-ALIPHATIC POLYESTER**(75) Inventors: **Gary Michael Stack**, Kingsport,
TN (US); **Wesley Raymond Hale**,
Kingsport, TN (US)(73) Assignee: **EASTMAN CHEMICAL
COMPANY**, Kingsport, TN (US)(21) Appl. No.: **13/097,722**(22) Filed: **Apr. 29, 2011****Related U.S. Application Data**(60) Provisional application No. 61/433,337, filed on Jan.
17, 2011.**Publication Classification**(51) **Int. Cl.**
C08L 69/00 (2006.01)
C08L 67/03 (2006.01)
(52) **U.S. Cl.** **524/537; 525/450**
(57) **ABSTRACT**

The present disclosure relates to clear polymer blends comprising an aromatic-aliphatic polyester comprising terephthalic acid, 2,2,4,4-tetramethyl-1,3-cyclobutanediol, and 1,4-cyclohexanedimethanol or ethylene glycol, an aliphatic polyester comprising 1,4 cyclohexane dicarboxylic acid and 1,4 cyclohexanedimethanol, and a polycarbonate comprising 4,4'-isopropylidenediphenol (bisphenol A). The compositions of the present disclosure have a certain combination of two or more properties of clarity, heat resistance, high glass transition temperatures, chemical resistance, toughness, miscibility, and/or good flowability, while retaining processability, which allow them to be easily formed into items, for example, molded articles, films, and fibers.

**CLEAR TERNARY BLENDS OF
POLYCARBONATE WITH AN ALIPHATIC
POLYESTER AND AN
AROMATIC-ALIPHATIC POLYESTER**

[0001] The present disclosure generally relates to clear polymer blends comprising two high molecular weight polyesters and a bisphenol A polycarbonate. The polymer blends of the present disclosure comprise: a) an aromatic-aliphatic polyester made from terephthalic acid, 2,2,4,4-tetramethyl-1,3-cyclobutanediol, and either 1,4-cyclohexanedimethanol or ethylene glycol; b) an aliphatic polyester made from 1,4-cyclohexane dicarboxylic acid and 1,4-cyclohexanedimethanol (PCCD); and c) a polycarbonate of 4,4'-isopropylidenediphenol (bisphenol A). The compositions of the present disclosure have a certain combination of two or more properties of clarity, heat resistance, high glass transition temperatures, chemical resistance, toughness, miscibility and/or good flowability, while retaining processability, which allow them to be easily formed into items, for example, molded articles, films, and fibers.

[0002] Molded plastics, films, and fibers can be produced with a variety of plastic materials by a variety of processes, such as extrusion blow molding, stretch blow molding, etc. These plastic materials may comprise mixtures of structurally different polymers or copolymers in multicomponent blends, which may have certain properties superior to those of the individual polymers. In general, desired properties include improved heat resistance, chemical resistance, and melt processability. Clarity is also a desired characteristic for various plastic materials, yet few blends comprising two or more polymers are clear.

[0003] One common copolyester used to produce films, sheeting, and molded articles is made from terephthalic acid, 1,4-cyclohexanedimethanol, and ethylene glycol. While these copolyesters are useful in many end-use applications, they exhibit deficiencies in properties such as glass transition temperature and impact strength when sufficient modifying ethylene glycol is included in the formulation in order to provide for long crystallization half-times.

[0004] The polycarbonate of 4,4'-isopropylidenediphenol (bisphenol A polycarbonate) has been used as an alternative for polyesters known in the art and is a well known engineering molding plastic. Bisphenol A polycarbonate is a clear, high-performance plastic having good physical properties such as dimensional stability, high heat resistance, and good impact strength. Although bisphenol-A polycarbonate has many potentially desirable physical properties, its relatively high melt viscosity leads to poor melt processability and the material exhibits poor chemical resistance. Bisphenol-A polycarbonate is also difficult to thermoform.

[0005] The present disclosure relates to a ternary blend of PCCD, a bisphenol-A polycarbonate, and an aromatic-aliphatic polyester comprising 2,2,4,4-tetramethyl-1,3-cyclobutanediol and either 1,4-cyclohexanedimethanol or ethylene glycol, wherein the aromatic-aliphatic polyester and polycarbonate form a hazy blend, which is made clear by the addition of PCCD. These polymer blends have a unique combination of two or more of the following properties: clarity, toughness, high glass transition temperatures, heat resistance, chemical resistance, miscibility and/or good flowability, while retaining processability on the standard equipment used in the industry.

[0006] The present disclosure relates to clear polymer blends comprising an aromatic-aliphatic polyester, an aliphatic polyester, and a bisphenol A polycarbonate.

[0007] In one embodiment, the disclosure is directed to a composition comprising:

[0008] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:

[0009] (a) a dicarboxylic acid component comprising:

[0010] (i) 80 to 100 mole % of terephthalic acid residues;

[0011] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and

[0012] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;

[0013] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and

[0014] (b) a glycol component comprising:

[0015] (i) 5 to 100 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and

[0016] (ii) 0 to 95 mole % of 1,4-cyclohexanedimethanol residues, ethylene glycol residues, or a mixture thereof;

[0017] wherein the total mole % of the glycol component is 100 mole %;

[0018] (II) 3 to 80 weight % of at least one aliphatic polyester comprising:

[0019] (a) a dicarboxylic acid component comprising:

[0020] (i) 80 to 100 mole % of 1,4-cyclohexane dicarboxylic acid residues; and

[0021] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;

[0022] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and

[0023] (b) a glycol component comprising 1,4-cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and

[0024] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.

[0025] In one embodiment, the disclosure is directed to a composition comprising:

[0026] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:

[0027] (a) a dicarboxylic acid component comprising:

[0028] (i) 80 to 100 mole % of terephthalic acid residues;

[0029] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and

[0030] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;

[0031] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and

[0032] (b) a glycol component comprising:

[0033] (i) 5 to 50 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and

[0034] (ii) 50 to 95 mole % of 1,4-cyclohexanedimethanol residues, ethylene glycol residues, or a mixture thereof;

[0035] wherein the total mole % of the glycol component is 100 mole %;

- [0036] (II) 3 to 80 weight % of at least one aliphatic polyester comprising:
- [0037] (a) a dicarboxylic acid component comprising:
- [0038] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and
- [0039] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [0040] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [0041] (b) a glycol component comprising 1,4-cyclohexanedimethanol residues;
- [0042] wherein the total mole % of the glycol component is 100 mole %; and
- [0043] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.
- [0044] In one embodiment, the disclosure is directed to a composition comprising:
- [0045] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:
- [0046] (a) a dicarboxylic acid component comprising:
- [0047] (i) 80 to 100 mole % of terephthalic acid residues;
- [0048] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and
- [0049] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [0050] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [0051] (b) a glycol component comprising:
- [0052] (i) 15 to 45 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and
- [0053] (ii) 55 to 85 mole % of 1,4-cyclohexanedimethanol residues, ethylene glycol residues, or a mixture thereof;
- [0054] wherein the total mole % of the glycol component is 100 mole %;
- [0055] (II) 3 to 80 weight % of at least one aliphatic polyester comprising:
- [0056] (a) a dicarboxylic acid component comprising:
- [0057] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and
- [0058] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [0059] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [0060] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and
- [0061] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.
- [0062] In one embodiment, the disclosure is directed to a composition comprising:
- [0063] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:
- [0064] (a) a dicarboxylic acid component comprising:
- [0065] (i) 80 to 100 mole % of terephthalic acid residues;
- [0066] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and
- [0067] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [0068] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [0069] (b) a glycol component comprising:
- [0070] (i) 15 to 40 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and
- [0071] (ii) 60 to 85 mole % of 1,4-cyclohexanedimethanol residues, ethylene glycol residues, or a mixture thereof;
- [0072] wherein the total mole % of the glycol component is 100 mole %;
- [0073] (II) 3 to 80 weight % of at least one aliphatic polyester comprising:
- [0074] (a) a dicarboxylic acid component comprising:
- [0075] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and
- [0076] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [0077] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [0078] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and
- [0079] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.
- [0080] In one embodiment, the disclosure is directed to a composition comprising:
- [0081] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:
- [0082] (a) a dicarboxylic acid component comprising:
- [0083] (i) 80 to 100 mole % of terephthalic acid residues;
- [0084] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and
- [0085] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [0086] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [0087] (b) a glycol component comprising:
- [0088] (i) 15 to 30 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and
- [0089] (ii) 70 to 85 mole % of 1,4-cyclohexanedimethanol residues, ethylene glycol residues, or a mixture thereof;
- [0090] wherein the total mole % of the glycol component is 100 mole %;
- [0091] (II) 3 to 80 weight % of at least one aliphatic polyester comprising:
- [0092] (a) a dicarboxylic acid component comprising:
- [0093] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and
- [0094] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [0095] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [0096] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and
- [0097] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.

[0098] In one embodiment, the disclosure is directed to a composition comprising:

[0099] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:

[0100] (a) a dicarboxylic acid component comprising:

[0101] (i) 80 to 100 mole % of terephthalic acid residues;

[0102] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and

[0103] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;

[0104] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and

[0105] (b) a glycol component comprising:

[0106] (i) 30 to 40 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and

[0107] (ii) 60 to 70 mole % of 1,4-cyclohexanedimethanol residues, ethylene glycol residues, or a mixture thereof;

[0108] wherein the total mole % of the glycol component is 100 mole %;

[0109] (II) 3 to 80 weight % of at least one aliphatic polyester comprising:

[0110] (a) a dicarboxylic acid component comprising:

[0111] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and

[0112] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;

[0113] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and

[0114] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and

[0115] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.

[0116] In one embodiment, the disclosure is directed to a composition comprising:

[0117] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:

[0118] (a) a dicarboxylic acid component comprising:

[0119] (i) 80 to 100 mole % of terephthalic acid residues;

[0120] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and

[0121] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;

[0122] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and

[0123] (b) a glycol component comprising:

[0124] (i) 40 to 100 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and

[0125] (ii) 0 to 60 mole % of 1,4-cyclohexanedimethanol residues, ethylene glycol residues, or a mixture thereof;

[0126] wherein the total mole % of the glycol component is 100 mole %;

[0127] (II) 3 to 80 weight % of at least one aliphatic polyester comprising:

[0128] (a) a dicarboxylic acid component comprising:

[0129] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and

[0130] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;

[0131] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and

[0132] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and

[0133] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.

[0134] In one embodiment, the disclosure is directed to a composition comprising:

[0135] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:

[0136] (a) a dicarboxylic acid component comprising:

[0137] (i) 80 to 100 mole % of terephthalic acid residues;

[0138] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and

[0139] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;

[0140] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and

[0141] (b) a glycol component comprising:

[0142] (i) 40 to 99 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and

[0143] (ii) 1 to 60 mole % of 1,4-cyclohexanedimethanol residues, ethylene glycol residues, or a mixture thereof;

[0144] wherein the total mole % of the glycol component is 100 mole %;

[0145] (II) 3 to 80 weight % of at least one aliphatic polyester comprising:

[0146] (a) a dicarboxylic acid component comprising:

[0147] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and

[0148] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;

[0149] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and

[0150] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and

[0151] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.

[0152] In one embodiment, the disclosure is directed to a composition comprising:

[0153] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:

[0154] (a) a dicarboxylic acid component comprising:

[0155] (i) 80 to 100 mole % of terephthalic acid residues;

[0156] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and

[0157] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;

[0158] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and

[0159] (b) a glycol component comprising:

[0160] (i) 40 to 95 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and

[0161] (ii) 5 to 60 mole % of 1,4-cyclohexanedimethanol residues, ethylene glycol residues, or a mixture thereof;

- [0162] wherein the total mole % of the glycol component is 100 mole %;
- [0163] (II) 3 to 80 weight % of at least one aliphatic polyester comprising:
- [0164] (a) a dicarboxylic acid component comprising:
- [0165] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and
- [0166] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [0167] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [0168] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and
- [0169] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.
- [0170] In one embodiment, the disclosure is directed to a composition comprising:
- [0171] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:
- [0172] (a) a dicarboxylic acid component comprising:
- [0173] (i) 80 to 100 mole % of terephthalic acid residues;
- [0174] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and
- [0175] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [0176] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [0177] (b) a glycol component comprising:
- [0178] (i) 40 to 90 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and
- [0179] (ii) 10 to 60 mole % of 1,4-cyclohexanedimethanol residues, ethylene glycol residues, or a mixture thereof;
- [0180] wherein the total mole % of the glycol component is 100 mole %;
- [0181] (II) 3 to 80 weight % of at least one aliphatic polyester comprising:
- [0182] (a) a dicarboxylic acid component comprising:
- [0183] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and
- [0184] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [0185] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [0186] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and
- [0187] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.
- [0188] In one embodiment, the disclosure is directed to a composition comprising:
- [0189] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:
- [0190] (a) a dicarboxylic acid component comprising:
- [0191] (i) 80 to 100 mole % of terephthalic acid residues;
- [0192] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and
- [0193] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [0194] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [0195] (b) a glycol component comprising:
- [0196] (i) 40 to 85 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and
- [0197] (ii) 15 to 60 mole % of 1,4-cyclohexanedimethanol residues, ethylene glycol residues, or a mixture thereof;
- [0198] wherein the total mole % of the glycol component is 100 mole %;
- [0199] (II) 3 to 80 weight % of at least one aliphatic polyester comprising:
- [0200] (a) a dicarboxylic acid component comprising:
- [0201] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and
- [0202] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [0203] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [0204] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and
- [0205] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.
- [0206] In one embodiment, the disclosure is directed to a composition comprising:
- [0207] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:
- [0208] (a) a dicarboxylic acid component comprising:
- [0209] (i) 80 to 100 mole % of terephthalic acid residues;
- [0210] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and
- [0211] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [0212] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [0213] (b) a glycol component comprising:
- [0214] (i) 40 to 80 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and
- [0215] (ii) 20 to 60 mole % of 1,4-cyclohexanedimethanol residues, ethylene glycol residues, or a mixture thereof;
- [0216] wherein the total mole % of the glycol component is 100 mole %;
- [0217] (II) 3 to 80 weight % of at least one aliphatic polyester comprising:
- [0218] (a) a dicarboxylic acid component comprising:
- [0219] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and
- [0220] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [0221] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [0222] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and
- [0223] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.

[0224] In one embodiment, the disclosure is directed to a composition comprising:

[0225] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:

[0226] (a) a dicarboxylic acid component comprising:

[0227] (i) 80 to 100 mole % of terephthalic acid residues;

[0228] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and

[0229] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;

[0230] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and

[0231] (b) a glycol component comprising:

[0232] (i) 40 to 70 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and

[0233] (ii) 30 to 60 mole % of 1,4-cyclohexanedimethanol residues, ethylene glycol residues, or a mixture thereof;

[0234] wherein the total mole % of the glycol component is 100 mole %;

[0235] (II) 3 to 80 weight % of at least one aliphatic polyester comprising:

[0236] (a) a dicarboxylic acid component comprising:

[0237] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and

[0238] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;

[0239] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and

[0240] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and

[0241] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.

[0242] In one embodiment, the disclosure is directed to a composition comprising:

[0243] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:

[0244] (a) a dicarboxylic acid component comprising:

[0245] (i) 80 to 100 mole % of terephthalic acid residues;

[0246] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and

[0247] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;

[0248] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and

[0249] (b) a glycol component comprising:

[0250] (i) 40 to 60 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and

[0251] (ii) 40 to 60 mole % of 1,4-cyclohexanedimethanol residues, ethylene glycol residues, or a mixture thereof;

[0252] wherein the total mole % of the glycol component is 100 mole %;

[0253] (II) 3 to 80 weight % of at least one aliphatic polyester comprising:

[0254] (a) a dicarboxylic acid component comprising:

[0255] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and

[0256] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;

[0257] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and

[0258] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and

[0259] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.

[0260] In one embodiment, the disclosure is directed to a composition comprising:

[0261] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:

[0262] (a) a dicarboxylic acid component comprising:

[0263] (i) 80 to 100 mole % of terephthalic acid residues;

[0264] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and

[0265] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;

[0266] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and

[0267] (b) a glycol component comprising:

[0268] (i) 50 to 100 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and

[0269] (ii) 0 to 50 mole % of 1,4-cyclohexanedimethanol residues, ethylene glycol residues, or a mixture thereof;

[0270] wherein the total mole % of the glycol component is 100 mole %;

[0271] (II) 3 to 80 weight % of at least one aliphatic polyester comprising:

[0272] (a) a dicarboxylic acid component comprising:

[0273] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and

[0274] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;

[0275] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and

[0276] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and

[0277] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.

[0278] In one embodiment, the disclosure is directed to a composition comprising:

[0279] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:

[0280] (a) a dicarboxylic acid component comprising:

[0281] (i) 80 to 100 mole % of terephthalic acid residues;

[0282] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and

[0283] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;

[0284] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and

[0285] (b) a glycol component comprising:

[0286] (i) 50 to 95 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and

[0287] (ii) 5 to 50 mole % of 1,4-cyclohexanedimethanol residues, ethylene glycol residues, or a mixture thereof;

- [0288] wherein the total mole % of the glycol component is 100 mole %;
- [0289] (II) 3 to 80 weight % of at least one aliphatic polyester comprising:
- [0290] (a) a dicarboxylic acid component comprising:
- [0291] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and
- [0292] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [0293] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [0294] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and
- [0295] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.
- [0296] In one embodiment, the disclosure is directed to a composition comprising:
- [0297] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:
- [0298] (a) a dicarboxylic acid component comprising:
- [0299] (i) 80 to 100 mole % of terephthalic acid residues;
- [0300] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and
- [0301] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [0302] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [0303] (b) a glycol component comprising:
- [0304] (i) 50 to 80 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and
- [0305] (ii) 20 to 50 mole % of 1,4-cyclohexanedimethanol residues, ethylene glycol residues, or a mixture thereof;
- [0306] wherein the total mole % of the glycol component is 100 mole %;
- [0307] (II) 3 to 80 weight % of at least one aliphatic polyester comprising:
- [0308] (a) a dicarboxylic acid component comprising:
- [0309] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and
- [0310] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [0311] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [0312] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and
- [0313] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.
- [0314] In one embodiment, the disclosure is directed to a composition comprising:
- [0315] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:
- [0316] (a) a dicarboxylic acid component comprising:
- [0317] (i) 80 to 100 mole % of terephthalic acid residues;
- [0318] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and
- [0319] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [0320] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [0321] (b) a glycol component comprising:
- [0322] (i) 50 to 75 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and
- [0323] (ii) 25 to 50 mole % of 1,4-cyclohexanedimethanol residues, ethylene glycol residues, or a mixture thereof;
- [0324] wherein the total mole % of the glycol component is 100 mole %;
- [0325] (II) 3 to 80 weight % of at least one aliphatic polyester comprising:
- [0326] (a) a dicarboxylic acid component comprising:
- [0327] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and
- [0328] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [0329] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [0330] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and
- [0331] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.
- [0332] In one embodiment, the disclosure is directed to a composition comprising:
- [0333] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:
- [0334] (a) a dicarboxylic acid component comprising:
- [0335] (i) 80 to 100 mole % of terephthalic acid residues;
- [0336] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and
- [0337] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [0338] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [0339] (b) a glycol component comprising:
- [0340] (i) 5 to 100 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and
- [0341] (ii) 0 to 95 mole % of 1,4-cyclohexanedimethanol residues;
- [0342] wherein the total mole % of the glycol component is 100 mole %;
- [0343] (II) 3 to 80 weight % of at least one aliphatic polyester comprising:
- [0344] (a) a dicarboxylic acid component comprising:
- [0345] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and
- [0346] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [0347] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [0348] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and
- [0349] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.

[0350] In one embodiment, the disclosure is directed to a composition comprising:

[0351] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:

[0352] (a) a dicarboxylic acid component comprising:

[0353] (i) 80 to 100 mole % of terephthalic acid residues;

[0354] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and

[0355] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;

[0356] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and

[0357] (b) a glycol component comprising:

[0358] (i) 5 to 50 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and

[0359] (ii) 50 to 95 mole % of 1,4-cyclohexanedimethanol residues;

[0360] wherein the total mole % of the glycol component is 100 mole %;

[0361] (II) 3 to 80 weight % of at least one aliphatic polyester comprising:

[0362] (a) a dicarboxylic acid component comprising:

[0363] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and

[0364] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;

[0365] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and

[0366] (b) a glycol component comprising 1,4-cyclohexanedimethanol residues;

[0367] wherein the total mole % of the glycol component is 100 mole %; and

[0368] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.

[0369] In one embodiment, the disclosure is directed to a composition comprising:

[0370] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:

[0371] (a) a dicarboxylic acid component comprising:

[0372] (i) 80 to 100 mole % of terephthalic acid residues;

[0373] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and

[0374] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;

[0375] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and

[0376] (b) a glycol component comprising:

[0377] (i) 15 to 45 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and

[0378] (ii) 55 to 85 mole % of 1,4-cyclohexanedimethanol residues;

[0379] wherein the total mole % of the glycol component is 100 mole %;

[0380] (II) 3 to 80 weight % of at least one aliphatic polyester comprising:

[0381] (a) a dicarboxylic acid component comprising:

[0382] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and

[0383] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;

[0384] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and

[0385] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and

[0386] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.

[0387] In one embodiment, the disclosure is directed to a composition comprising:

[0388] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:

[0389] (a) a dicarboxylic acid component comprising:

[0390] (i) 80 to 100 mole % of terephthalic acid residues;

[0391] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and

[0392] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;

[0393] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and

[0394] (b) a glycol component comprising:

[0395] (i) 15 to 40 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and

[0396] (ii) 60 to 85 mole % of 1,4-cyclohexanedimethanol residues;

[0397] wherein the total mole % of the glycol component is 100 mole %;

[0398] (II) 3 to 80 weight % of at least one aliphatic polyester comprising:

[0399] (a) a dicarboxylic acid component comprising:

[0400] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and

[0401] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;

[0402] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and

[0403] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and

[0404] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.

[0405] In one embodiment, the disclosure is directed to a composition comprising:

[0406] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:

[0407] (a) a dicarboxylic acid component comprising:

[0408] (i) 80 to 100 mole % of terephthalic acid residues;

[0409] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and

[0410] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;

[0411] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and

[0412] (b) a glycol component comprising:

[0413] (i) 15 to 30 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and

[0414] (ii) 70 to 85 mole % of 1,4-cyclohexanedimethanol residues;

[0415] wherein the total mole % of the glycol component is 100 mole %;

- [0416] (II) 3 to 80 weight % of at least one aliphatic polyester comprising:
- [0417] (a) a dicarboxylic acid component comprising:
- [0418] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and
- [0419] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [0420] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [0421] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and
- [0422] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.
- [0423] In one embodiment, the disclosure is directed to a composition comprising:
- [0424] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:
- [0425] (a) a dicarboxylic acid component comprising:
- [0426] (i) 80 to 100 mole % of terephthalic acid residues;
- [0427] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and
- [0428] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [0429] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [0430] (b) a glycol component comprising:
- [0431] (i) 30 to 40 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and
- [0432] (ii) 60 to 70 mole % of 1,4-cyclohexanedimethanol residues;
- [0433] wherein the total mole % of the glycol component is 100 mole %;
- [0434] (II) 3 to 80 weight % of at least one aliphatic polyester comprising:
- [0435] (a) a dicarboxylic acid component comprising:
- [0436] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and
- [0437] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [0438] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [0439] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and
- [0440] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.
- [0441] In one embodiment, the disclosure is directed to a composition comprising:
- [0442] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:
- [0443] (a) a dicarboxylic acid component comprising:
- [0444] (i) 80 to 100 mole % of terephthalic acid residues;
- [0445] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and
- [0446] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [0447] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [0448] (b) a glycol component comprising:
- [0449] (i) 40 to 100 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and
- [0450] (ii) 0 to 60 mole % of 1,4-cyclohexanedimethanol residues;
- [0451] wherein the total mole % of the glycol component is 100 mole %;
- [0452] (II) 3 to 80 weight % of at least one aliphatic polyester comprising:
- [0453] (a) a dicarboxylic acid component comprising:
- [0454] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and
- [0455] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [0456] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [0457] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and
- [0458] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.
- [0459] In one embodiment, the disclosure is directed to a composition comprising:
- [0460] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:
- [0461] (a) a dicarboxylic acid component comprising:
- [0462] (i) 80 to 100 mole % of terephthalic acid residues;
- [0463] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and
- [0464] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [0465] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [0466] (b) a glycol component comprising:
- [0467] (i) 40 to 99 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and
- [0468] (ii) 1 to 60 mole % of 1,4-cyclohexanedimethanol residues;
- [0469] wherein the total mole % of the glycol component is 100 mole %;
- [0470] (II) 3 to 80 weight % of at least one aliphatic polyester comprising:
- [0471] (a) a dicarboxylic acid component comprising:
- [0472] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and
- [0473] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [0474] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [0475] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and
- [0476] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.
- [0477] In one embodiment, the disclosure is directed to a composition comprising:
- [0478] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:
- [0479] (a) a dicarboxylic acid component comprising:
- [0480] (i) 80 to 100 mole % of terephthalic acid residues;

- [0481] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and
- [0482] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [0483] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [0484] (b) a glycol component comprising:
- [0485] (i) 40 to 95 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and
- [0486] (ii) 5 to 60 mole % of 1,4-cyclohexanedimethanol residues;
- [0487] wherein the total mole % of the glycol component is 100 mole %;
- [0488] (II) 3 to 80 weight % of at least one aliphatic polyester comprising:
- [0489] (a) a dicarboxylic acid component comprising:
- [0490] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and
- [0491] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [0492] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [0493] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and
- [0494] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.
- [0495] In one embodiment, the disclosure is directed to a composition comprising:
- [0496] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:
- [0497] (a) a dicarboxylic acid component comprising:
- [0498] (i) 80 to 100 mole % of terephthalic acid residues;
- [0499] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and
- [0500] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [0501] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [0502] (b) a glycol component comprising:
- [0503] (i) 40 to 90 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and
- [0504] (ii) 10 to 60 mole % of 1,4-cyclohexanedimethanol residues;
- [0505] wherein the total mole % of the glycol component is 100 mole %;
- [0506] (II) 3 to 80 weight % of at least one aliphatic polyester comprising:
- [0507] (a) a dicarboxylic acid component comprising:
- [0508] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and
- [0509] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [0510] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [0511] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and
- [0512] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.
- [0513] In one embodiment, the disclosure is directed to a composition comprising:
- [0514] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:
- [0515] (a) a dicarboxylic acid component comprising:
- [0516] (i) 80 to 100 mole % of terephthalic acid residues;
- [0517] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and
- [0518] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [0519] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [0520] (b) a glycol component comprising:
- [0521] (i) 40 to 85 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and
- [0522] (ii) 15 to 60 mole % of 1,4-cyclohexanedimethanol residues;
- [0523] wherein the total mole % of the glycol component is 100 mole %;
- [0524] (II) 3 to 80 weight % of at least one aliphatic polyester comprising:
- [0525] (a) a dicarboxylic acid component comprising:
- [0526] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and
- [0527] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [0528] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [0529] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and
- [0530] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.
- [0531] In one embodiment, the disclosure is directed to a composition comprising:
- [0532] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:
- [0533] (a) a dicarboxylic acid component comprising:
- [0534] (i) 80 to 100 mole % of terephthalic acid residues;
- [0535] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and
- [0536] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [0537] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [0538] (b) a glycol component comprising:
- [0539] (i) 40 to 80 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and
- [0540] (ii) 20 to 60 mole % of 1,4-cyclohexanedimethanol residues;
- [0541] wherein the total mole % of the glycol component is 100 mole %;
- [0542] (II) 3 to 80 weight % of at least one aliphatic polyester comprising:
- [0543] (a) a dicarboxylic acid component comprising:
- [0544] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and
- [0545] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [0546] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and

- [0547] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and
- [0548] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.
- [0549] In one embodiment, the disclosure is directed to a composition comprising:
- [0550] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:
- [0551] (a) a dicarboxylic acid component comprising:
- [0552] (i) 80 to 100 mole % of terephthalic acid residues;
- [0553] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and
- [0554] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [0555] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [0556] (b) a glycol component comprising:
- [0557] (i) 40 to 70 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and
- [0558] (ii) 30 to 60 mole % of 1,4-cyclohexanedimethanol residues;
- [0559] wherein the total mole % of the glycol component is 100 mole %;
- [0560] (II) 3 to 80 weight % of at least one aliphatic polyester comprising:
- [0561] (a) a dicarboxylic acid component comprising:
- [0562] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and
- [0563] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [0564] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [0565] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and
- [0566] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.
- [0567] In one embodiment, the disclosure is directed to a composition comprising:
- [0568] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:
- [0569] (a) a dicarboxylic acid component comprising:
- [0570] (i) 80 to 100 mole % of terephthalic acid residues;
- [0571] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and
- [0572] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [0573] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [0574] (b) a glycol component comprising:
- [0575] (i) 40 to 60 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and
- [0576] (ii) 40 to 60 mole % of 1,4-cyclohexanedimethanol residues;
- [0577] wherein the total mole % of the glycol component is 100 mole %;
- [0578] (II) 3 to 80 weight % of at least one aliphatic polyester comprising:
- [0579] (a) a dicarboxylic acid component comprising:
- [0580] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and
- [0581] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [0582] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [0583] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and
- [0584] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.
- [0585] In one embodiment, the disclosure is directed to a composition comprising:
- [0586] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:
- [0587] (a) a dicarboxylic acid component comprising:
- [0588] (i) 80 to 100 mole % of terephthalic acid residues;
- [0589] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and
- [0590] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [0591] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [0592] (b) a glycol component comprising:
- [0593] (i) 5 to 100 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and
- [0594] (ii) 0 to 95 mole % of ethylene glycol residues;
- [0595] wherein the total mole % of the glycol component is 100 mole %;
- [0596] (II) 3 to 80 weight % of at least one aliphatic polyester comprising:
- [0597] (a) a dicarboxylic acid component comprising:
- [0598] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and
- [0599] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [0600] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [0601] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and
- [0602] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.
- [0603] In one embodiment, the disclosure is directed to a composition comprising:
- [0604] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:
- [0605] (a) a dicarboxylic acid component comprising:
- [0606] (i) 80 to 100 mole % of terephthalic acid residues;
- [0607] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and
- [0608] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [0609] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and

- [0610] (b) a glycol component comprising:
- [0611] (i) 5 to 50 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and
- [0612] (ii) 50 to 95 mole % of ethylene glycol residues;
- [0613] wherein the total mole % of the glycol component is 100 mole %;
- [0614] (II) 3 to 80 weight % of at least one aliphatic polyester comprising:
- [0615] (a) a dicarboxylic acid component comprising:
- [0616] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and
- [0617] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [0618] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [0619] (b) a glycol component comprising 1,4-cyclohexanedimethanol residues;
- [0620] wherein the total mole % of the glycol component is 100 mole %; and
- [0621] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.
- [0622] In one embodiment, the disclosure is directed to a composition comprising:
- [0623] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:
- [0624] (a) a dicarboxylic acid component comprising:
- [0625] (i) 80 to 100 mole % of terephthalic acid residues;
- [0626] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and
- [0627] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [0628] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [0629] (b) a glycol component comprising:
- [0630] (i) 15 to 45 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and
- [0631] (ii) 55 to 85 mole % of ethylene glycol residues;
- [0632] wherein the total mole % of the glycol component is 100 mole %;
- [0633] (II) 3 to 80 weight % of at least one aliphatic polyester comprising:
- [0634] (a) a dicarboxylic acid component comprising:
- [0635] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and
- [0636] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [0637] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [0638] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and
- [0639] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.
- [0640] In one embodiment, the disclosure is directed to a composition comprising:
- [0641] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:
- [0642] (a) a dicarboxylic acid component comprising:
- [0643] (i) 80 to 100 mole % of terephthalic acid residues;
- [0644] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and
- [0645] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [0646] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [0647] (b) a glycol component comprising:
- [0648] (i) 15 to 40 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and
- [0649] (ii) 60 to 85 mole % of ethylene glycol residues;
- [0650] wherein the total mole % of the glycol component is 100 mole %;
- [0651] (II) 3 to 80 weight % of at least one aliphatic polyester comprising:
- [0652] (a) a dicarboxylic acid component comprising:
- [0653] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and
- [0654] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [0655] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [0656] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and
- [0657] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.
- [0658] In one embodiment, the disclosure is directed to a composition comprising:
- [0659] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:
- [0660] (a) a dicarboxylic acid component comprising:
- [0661] (i) 80 to 100 mole % of terephthalic acid residues;
- [0662] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and
- [0663] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [0664] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [0665] (b) a glycol component comprising:
- [0666] (i) 15 to 30 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and
- [0667] (ii) 70 to 85 mole % of ethylene glycol residues;
- [0668] wherein the total mole % of the glycol component is 100 mole %;
- [0669] (II) 3 to 80 weight % of at least one aliphatic polyester comprising:
- [0670] (a) a dicarboxylic acid component comprising:
- [0671] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and
- [0672] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [0673] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and

- [0674] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and
- [0675] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.
- [0676] In one embodiment, the disclosure is directed to a composition comprising:
- [0677] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:
- [0678] (a) a dicarboxylic acid component comprising:
- [0679] (i) 80 to 100 mole % of terephthalic acid residues;
- [0680] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and
- [0681] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [0682] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [0683] (b) a glycol component comprising:
- [0684] (i) 30 to 40 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and
- [0685] (ii) 60 to 70 mole % of ethylene glycol residues;
- [0686] wherein the total mole % of the glycol component is 100 mole %;
- [0687] (II) 3 to 80 weight % of at least one aliphatic polyester comprising:
- [0688] (a) a dicarboxylic acid component comprising:
- [0689] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and
- [0690] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [0691] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [0692] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and
- [0693] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.
- [0694] In one embodiment, the disclosure is directed to a composition comprising:
- [0695] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:
- [0696] (a) a dicarboxylic acid component comprising:
- [0697] (i) 80 to 100 mole % of terephthalic acid residues;
- [0698] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and
- [0699] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [0700] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [0701] (b) a glycol component comprising:
- [0702] (i) 40 to 100 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and
- [0703] (ii) 0 to 60 mole % of ethylene glycol residues;
- [0704] wherein the total mole % of the glycol component is 100 mole %;
- [0705] (II) 3 to 80 weight % of at least one aliphatic polyester comprising:
- [0706] (a) a dicarboxylic acid component comprising:
- [0707] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and
- [0708] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [0709] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [0710] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and
- [0711] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.
- [0712] In one embodiment, the disclosure is directed to a composition comprising:
- [0713] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:
- [0714] (a) a dicarboxylic acid component comprising:
- [0715] (i) 80 to 100 mole % of terephthalic acid residues;
- [0716] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and
- [0717] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [0718] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [0719] (b) a glycol component comprising:
- [0720] (i) 40 to 99 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and
- [0721] (ii) 1 to 60 mole % of ethylene glycol residues;
- [0722] wherein the total mole % of the glycol component is 100 mole %;
- [0723] (II) 3 to 80 weight % of at least one aliphatic polyester comprising:
- [0724] (a) a dicarboxylic acid component comprising:
- [0725] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and
- [0726] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [0727] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [0728] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and
- [0729] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.
- [0730] In one embodiment, the disclosure is directed to a composition comprising:
- [0731] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:
- [0732] (a) a dicarboxylic acid component comprising:
- [0733] (i) 80 to 100 mole % of terephthalic acid residues;
- [0734] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and
- [0735] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [0736] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and

- [0737] (b) a glycol component comprising:
- [0738] (i) 40 to 95 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and
- [0739] (ii) 5 to 60 mole % of ethylene glycol residues;
- [0740] wherein the total mole % of the glycol component is 100 mole %;
- [0741] (II) 3 to 80 weight % of at least one aliphatic polyester comprising:
- [0742] (a) a dicarboxylic acid component comprising:
- [0743] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and
- [0744] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [0745] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [0746] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and
- [0747] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.
- [0748] In one embodiment, the disclosure is directed to a composition comprising:
- [0749] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:
- [0750] (a) a dicarboxylic acid component comprising:
- [0751] (i) 80 to 100 mole % of terephthalic acid residues;
- [0752] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and
- [0753] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [0754] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [0755] (b) a glycol component comprising:
- [0756] (i) 40 to 90 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and
- [0757] (ii) 10 to 60 mole % of ethylene glycol residues;
- [0758] wherein the total mole % of the glycol component is 100 mole %;
- [0759] (II) 3 to 80 weight % of at least one aliphatic polyester comprising:
- [0760] (a) a dicarboxylic acid component comprising:
- [0761] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and
- [0762] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [0763] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [0764] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and
- [0765] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.
- [0766] In one embodiment, the disclosure is directed to a composition comprising:
- [0767] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:
- [0768] (a) a dicarboxylic acid component comprising:
- [0769] (i) 80 to 100 mole % of terephthalic acid residues;
- [0770] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and
- [0771] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [0772] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [0773] (b) a glycol component comprising:
- [0774] (i) 40 to 85 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and
- [0775] (ii) 15 to 60 mole % of ethylene glycol residues;
- [0776] wherein the total mole % of the glycol component is 100 mole %;
- [0777] (II) 3 to 80 weight % of at least one aliphatic polyester comprising:
- [0778] (a) a dicarboxylic acid component comprising:
- [0779] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and
- [0780] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [0781] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [0782] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and
- [0783] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.
- [0784] In one embodiment, the disclosure is directed to a composition comprising:
- [0785] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:
- [0786] (a) a dicarboxylic acid component comprising:
- [0787] (i) 80 to 100 mole % of terephthalic acid residues;
- [0788] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and
- [0789] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [0790] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [0791] (b) a glycol component comprising:
- [0792] (i) 40 to 80 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and
- [0793] (ii) 20 to 60 mole % of ethylene glycol residues;
- [0794] wherein the total mole % of the glycol component is 100 mole %;
- [0795] (II) 3 to 80 weight % of at least one aliphatic polyester comprising:
- [0796] (a) a dicarboxylic acid component comprising:
- [0797] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and
- [0798] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [0799] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [0800] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and
- [0801] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.

[0802] In one embodiment, the disclosure is directed to a composition comprising:

[0803] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:

[0804] (a) a dicarboxylic acid component comprising:

[0805] (i) 80 to 100 mole % of terephthalic acid residues;

[0806] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and

[0807] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;

[0808] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and

[0809] (b) a glycol component comprising:

[0810] (i) 40 to 70 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and

[0811] (ii) 30 to 60 mole % of ethylene glycol residues;

[0812] wherein the total mole % of the glycol component is 100 mole %;

[0813] (II) 3 to 80 weight % of at least one aliphatic polyester comprising:

[0814] (a) a dicarboxylic acid component comprising:

[0815] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and

[0816] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;

[0817] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and

[0818] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and

[0819] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.

[0820] In one embodiment, the disclosure is directed to a composition comprising:

[0821] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:

[0822] (a) a dicarboxylic acid component comprising:

[0823] (i) 80 to 100 mole % of terephthalic acid residues;

[0824] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and

[0825] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;

[0826] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and

[0827] (b) a glycol component comprising:

[0828] (i) 40 to 60 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and

[0829] (ii) 40 to 60 mole % of ethylene glycol residues;

[0830] wherein the total mole % of the glycol component is 100 mole %;

[0831] (II) 3 to 80 weight % of at least one aliphatic polyester comprising:

[0832] (a) a dicarboxylic acid component comprising:

[0833] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and

[0834] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;

[0835] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and

[0836] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and

[0837] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.

[0838] In one embodiment, the disclosure is directed to a composition comprising:

[0839] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:

[0840] (a) a dicarboxylic acid component comprising:

[0841] (i) 80 to 100 mole % of terephthalic acid residues;

[0842] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and

[0843] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;

[0844] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and

[0845] (b) a glycol component comprising:

[0846] (i) 50 to 95 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and

[0847] (ii) 5 to 50 mole % of ethylene glycol residues;

[0848] wherein the total mole % of the glycol component is 100 mole %;

[0849] (II) 3 to 80 weight % of at least one aliphatic polyester comprising:

[0850] (a) a dicarboxylic acid component comprising:

[0851] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and

[0852] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;

[0853] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and

[0854] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and

[0855] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.

[0856] In one embodiment, the disclosure is directed to a composition comprising:

[0857] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:

[0858] (a) a dicarboxylic acid component comprising:

[0859] (i) 80 to 100 mole % of terephthalic acid residues;

[0860] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and

[0861] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;

[0862] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and

[0863] (b) a glycol component comprising:

[0864] (i) 50 to 80 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and

[0865] (ii) 20 to 50 mole % of ethylene glycol residues;

[0866] wherein the total mole % of the glycol component is 100 mole %;

- [0867] (II) 3 to 80 weight % of at least one aliphatic polyester comprising:
- [0868] (a) a dicarboxylic acid component comprising:
- [0869] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and
- [0870] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [0871] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [0872] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and
- [0873] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.
- [0874] In one embodiment, the disclosure is directed to a composition comprising:
- [0875] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:
- [0876] (a) a dicarboxylic acid component comprising:
- [0877] (i) 80 to 100 mole % of terephthalic acid residues;
- [0878] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and
- [0879] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [0880] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [0881] (b) a glycol component comprising:
- [0882] (i) 50 to 75 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and
- [0883] (ii) 25 to 50 mole % of ethylene glycol residues;
- [0884] wherein the total mole % of the glycol component is 100 mole %;
- [0885] (II) 3 to 80 weight % of at least one aliphatic polyester comprising:
- [0886] (a) a dicarboxylic acid component comprising:
- [0887] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and
- [0888] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [0889] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [0890] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and
- [0891] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.
- [0892] In one embodiment, the disclosure is directed to a composition comprising:
- [0893] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:
- [0894] (a) a dicarboxylic acid component comprising:
- [0895] (i) 80 to 100 mole % of terephthalic acid residues;
- [0896] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and
- [0897] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [0898] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [0899] (b) a glycol component comprising:
- [0900] (i) 5 to 100 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and
- [0901] (ii) 0 to 95 mole % of 1,4-cyclohexanedimethanol residues, ethylene glycol residues, or a mixture thereof;
- [0902] wherein the total mole % of the glycol component is 100 mole %;
- [0903] (II) 3 to 15 weight % of at least one aliphatic polyester comprising:
- [0904] (a) a dicarboxylic acid component comprising:
- [0905] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and
- [0906] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [0907] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [0908] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and
- [0909] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.
- [0910] In one embodiment, the disclosure is directed to a composition comprising:
- [0911] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:
- [0912] (a) a dicarboxylic acid component comprising:
- [0913] (i) 80 to 100 mole % of terephthalic acid residues;
- [0914] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and
- [0915] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [0916] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [0917] (b) a glycol component comprising:
- [0918] (i) 5 to 50 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and
- [0919] (ii) 50 to 95 mole % of 1,4-cyclohexanedimethanol residues, ethylene glycol residues, or a mixture thereof;
- [0920] wherein the total mole % of the glycol component is 100 mole %;
- [0921] (II) 3 to 15 weight % of at least one aliphatic polyester comprising:
- [0922] (a) a dicarboxylic acid component comprising:
- [0923] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and
- [0924] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [0925] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [0926] (b) a glycol component comprising 1,4-cyclohexanedimethanol residues;
- [0927] wherein the total mole % of the glycol component is 100 mole %; and
- [0928] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.

[0929] In one embodiment, the disclosure is directed to a composition comprising:

[0930] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:

[0931] (a) a dicarboxylic acid component comprising:

[0932] (i) 80 to 100 mole % of terephthalic acid residues;

[0933] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and

[0934] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;

[0935] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and

[0936] (b) a glycol component comprising:

[0937] (i) 15 to 45 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and

[0938] (ii) 55 to 85 mole % of 1,4-cyclohexanedimethanol residues, ethylene glycol residues, or a mixture thereof;

[0939] wherein the total mole % of the glycol component is 100 mole %;

[0940] (II) 3 to 15 weight % of at least one aliphatic polyester comprising:

[0941] (a) a dicarboxylic acid component comprising:

[0942] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and

[0943] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;

[0944] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and

[0945] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and

[0946] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.

[0947] In one embodiment, the disclosure is directed to a composition comprising:

[0948] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:

[0949] (a) a dicarboxylic acid component comprising:

[0950] (i) 80 to 100 mole % of terephthalic acid residues;

[0951] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and

[0952] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;

[0953] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and

[0954] (b) a glycol component comprising:

[0955] (i) 15 to 40 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and

[0956] (ii) 60 to 85 mole % of 1,4-cyclohexanedimethanol residues, ethylene glycol residues, or a mixture thereof;

[0957] wherein the total mole % of the glycol component is 100 mole %;

[0958] (II) 3 to 15 weight % of at least one aliphatic polyester comprising:

[0959] (a) a dicarboxylic acid component comprising:

[0960] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and

[0961] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;

[0962] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and

[0963] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and

[0964] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.

[0965] In one embodiment, the disclosure is directed to a composition comprising:

[0966] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:

[0967] (a) a dicarboxylic acid component comprising:

[0968] (i) 80 to 100 mole % of terephthalic acid residues;

[0969] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and

[0970] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;

[0971] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and

[0972] (b) a glycol component comprising:

[0973] (i) 15 to 30 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and

[0974] (ii) 70 to 85 mole % of 1,4-cyclohexanedimethanol residues, ethylene glycol residues, or a mixture thereof;

[0975] wherein the total mole % of the glycol component is 100 mole %;

[0976] (II) 3 to 15 weight % of at least one aliphatic polyester comprising:

[0977] (a) a dicarboxylic acid component comprising:

[0978] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and

[0979] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;

[0980] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and

[0981] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and

[0982] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.

[0983] In one embodiment, the disclosure is directed to a composition comprising:

[0984] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:

[0985] (a) a dicarboxylic acid component comprising:

[0986] (i) 80 to 100 mole % of terephthalic acid residues;

[0987] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and

[0988] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;

[0989] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and

[0990] (b) a glycol component comprising:

[0991] (i) 30 to 40 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and

[0992] (ii) 60 to 70 mole % of 1,4-cyclohexanedimethanol residues, ethylene glycol residues, or a mixture thereof;

- [0993] wherein the total mole % of the glycol component is 100 mole %;
- [0994] (II) 3 to 15 weight % of at least one aliphatic polyester comprising:
- [0995] (a) a dicarboxylic acid component comprising:
- [0996] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and
- [0997] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [0998] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [0999] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and
- [1000] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.
- [1001] In one embodiment, the disclosure is directed to a composition comprising:
- [1002] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:
- [1003] (a) a dicarboxylic acid component comprising:
- [1004] (i) 80 to 100 mole % of terephthalic acid residues;
- [1005] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and
- [1006] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [1007] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [1008] (b) a glycol component comprising:
- [1009] (i) 40 to 100 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and
- [1010] (ii) 0 to 60 mole % of 1,4-cyclohexanedimethanol residues, ethylene glycol residues, or a mixture thereof;
- [1011] wherein the total mole % of the glycol component is 100 mole %;
- [1012] (II) 3 to 15 weight % of at least one aliphatic polyester comprising:
- [1013] (a) a dicarboxylic acid component comprising:
- [1014] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and
- [1015] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [1016] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [1017] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and
- [1018] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.
- [1019] In one embodiment, the disclosure is directed to a composition comprising:
- [1020] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:
- [1021] (a) a dicarboxylic acid component comprising:
- [1022] (i) 80 to 100 mole % of terephthalic acid residues;
- [1023] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and
- [1024] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [1025] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [1026] (b) a glycol component comprising:
- [1027] (i) 40 to 99 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and
- [1028] (ii) 1 to 60 mole % of 1,4-cyclohexanedimethanol residues, ethylene glycol residues, or a mixture thereof;
- [1029] wherein the total mole % of the glycol component is 100 mole %;
- [1030] (II) 3 to 15 weight % of at least one aliphatic polyester comprising:
- [1031] (a) a dicarboxylic acid component comprising:
- [1032] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and
- [1033] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [1034] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [1035] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and
- [1036] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.
- [1037] In one embodiment, the disclosure is directed to a composition comprising:
- [1038] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:
- [1039] (a) a dicarboxylic acid component comprising:
- [1040] (i) 80 to 100 mole % of terephthalic acid residues;
- [1041] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and
- [1042] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [1043] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [1044] (b) a glycol component comprising:
- [1045] (i) 40 to 95 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and
- [1046] (ii) 5 to 60 mole % of 1,4-cyclohexanedimethanol residues, ethylene glycol residues, or a mixture thereof;
- [1047] wherein the total mole % of the glycol component is 100 mole %;
- [1048] (II) 3 to 15 weight % of at least one aliphatic polyester comprising:
- [1049] (a) a dicarboxylic acid component comprising:
- [1050] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and
- [1051] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [1052] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [1053] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and
- [1054] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.

[1055] In one embodiment, the disclosure is directed to a composition comprising:

[1056] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:

[1057] (a) a dicarboxylic acid component comprising:

[1058] (i) 80 to 100 mole % of terephthalic acid residues;

[1059] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and

[1060] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;

[1061] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and

[1062] (b) a glycol component comprising:

[1063] (i) 40 to 90 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and

[1064] (ii) 10 to 60 mole % of 1,4-cyclohexanedimethanol residues, ethylene glycol residues, or a mixture thereof;

[1065] wherein the total mole % of the glycol component is 100 mole %;

[1066] (II) 3 to 15 weight % of at least one aliphatic polyester comprising:

[1067] (a) a dicarboxylic acid component comprising:

[1068] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and

[1069] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;

[1070] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and

[1071] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and

[1072] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.

[1073] In one embodiment, the disclosure is directed to a composition comprising:

[1074] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:

[1075] (a) a dicarboxylic acid component comprising:

[1076] (i) 80 to 100 mole % of terephthalic acid residues;

[1077] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and

[1078] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;

[1079] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and

[1080] (b) a glycol component comprising:

[1081] (i) 40 to 85 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and

[1082] (ii) 15 to 60 mole % of 1,4-cyclohexanedimethanol residues, ethylene glycol residues, or a mixture thereof;

[1083] wherein the total mole % of the glycol component is 100 mole %;

[1084] (II) 3 to 15 weight % of at least one aliphatic polyester comprising:

[1085] (a) a dicarboxylic acid component comprising:

[1086] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and

[1087] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;

[1088] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and

[1089] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and

[1090] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.

[1091] In one embodiment, the disclosure is directed to a composition comprising:

[1092] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:

[1093] (a) a dicarboxylic acid component comprising:

[1094] (i) 80 to 100 mole % of terephthalic acid residues;

[1095] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and

[1096] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;

[1097] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and

[1098] (b) a glycol component comprising:

[1099] (i) 40 to 80 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and

[1100] (ii) 20 to 60 mole % of 1,4-cyclohexanedimethanol residues, ethylene glycol residues, or a mixture thereof;

[1101] wherein the total mole % of the glycol component is 100 mole %;

[1102] (II) 3 to 15 weight % of at least one aliphatic polyester comprising:

[1103] (a) a dicarboxylic acid component comprising:

[1104] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and

[1105] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;

[1106] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and

[1107] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and

[1108] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.

[1109] In one embodiment, the disclosure is directed to a composition comprising:

[1110] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:

[1111] (a) a dicarboxylic acid component comprising:

[1112] (i) 80 to 100 mole % of terephthalic acid residues;

[1113] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and

[1114] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;

[1115] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and

[1116] (b) a glycol component comprising:

[1117] (i) 40 to 70 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and

[1118] (ii) 30 to 60 mole % of 1,4-cyclohexanedimethanol residues, ethylene glycol residues, or a mixture thereof;

- [1119] wherein the total mole % of the glycol component is 100 mole %;
- [1120] (II) 3 to 15 weight % of at least one aliphatic polyester comprising:
- [1121] (a) a dicarboxylic acid component comprising:
- [1122] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and
- [1123] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [1124] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [1125] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and
- [1126] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.
- [1127] In one embodiment, the disclosure is directed to a composition comprising:
- [1128] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:
- [1129] (a) a dicarboxylic acid component comprising:
- [1130] (i) 80 to 100 mole % of terephthalic acid residues;
- [1131] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and
- [1132] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [1133] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [1134] (b) a glycol component comprising:
- [1135] (i) 40 to 60 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and
- [1136] (ii) 40 to 60 mole % of 1,4-cyclohexanedimethanol residues, ethylene glycol residues, or a mixture thereof;
- [1137] wherein the total mole % of the glycol component is 100 mole %;
- [1138] (II) 3 to 15 weight % of at least one aliphatic polyester comprising:
- [1139] (a) a dicarboxylic acid component comprising:
- [1140] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and
- [1141] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [1142] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [1143] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and
- [1144] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.
- [1145] In one embodiment, the disclosure is directed to a composition comprising:
- [1146] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:
- [1147] (a) a dicarboxylic acid component comprising:
- [1148] (i) 80 to 100 mole % of terephthalic acid residues;
- [1149] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and
- [1150] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [1151] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [1152] (b) a glycol component comprising:
- [1153] (i) 50 to 100 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and
- [1154] (ii) 0 to 50 mole % of 1,4-cyclohexanedimethanol residues, ethylene glycol residues, or a mixture thereof;
- [1155] wherein the total mole % of the glycol component is 100 mole %;
- [1156] (II) 3 to 15 weight % of at least one aliphatic polyester comprising:
- [1157] (a) a dicarboxylic acid component comprising:
- [1158] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and
- [1159] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [1160] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [1161] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and
- [1162] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.
- [1163] In one embodiment, the disclosure is directed to a composition comprising:
- [1164] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:
- [1165] (a) a dicarboxylic acid component comprising:
- [1166] (i) 80 to 100 mole % of terephthalic acid residues;
- [1167] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and
- [1168] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [1169] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [1170] (b) a glycol component comprising:
- [1171] (i) 50 to 95 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and
- [1172] (ii) 5 to 50 mole % of 1,4-cyclohexanedimethanol residues, ethylene glycol residues, or a mixture thereof;
- [1173] wherein the total mole % of the glycol component is 100 mole %;
- [1174] (II) 3 to 15 weight % of at least one aliphatic polyester comprising:
- [1175] (a) a dicarboxylic acid component comprising:
- [1176] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and
- [1177] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [1178] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [1179] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and
- [1180] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.

[1181] In one embodiment, the disclosure is directed to a composition comprising:

[1182] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:

[1183] (a) a dicarboxylic acid component comprising:

[1184] (i) 80 to 100 mole % of terephthalic acid residues;

[1185] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and

[1186] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;

[1187] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and

[1188] (b) a glycol component comprising:

[1189] (i) 50 to 80 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and

[1190] (ii) 20 to 50 mole % of 1,4-cyclohexanedimethanol residues, ethylene glycol residues, or a mixture thereof;

[1191] wherein the total mole % of the glycol component is 100 mole %;

[1192] (II) 3 to 15 weight % of at least one aliphatic polyester comprising:

[1193] (a) a dicarboxylic acid component comprising:

[1194] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and

[1195] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;

[1196] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and

[1197] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and

[1198] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.

[1199] In one embodiment, the disclosure is directed to a composition comprising:

[1200] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:

[1201] (a) a dicarboxylic acid component comprising:

[1202] (i) 80 to 100 mole % of terephthalic acid residues;

[1203] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and

[1204] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;

[1205] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and

[1206] (b) a glycol component comprising:

[1207] (i) 50 to 75 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and

[1208] (ii) 25 to 50 mole % of 1,4-cyclohexanedimethanol residues, ethylene glycol residues, or a mixture thereof;

[1209] wherein the total mole % of the glycol component is 100 mole %;

[1210] (II) 3 to 15 weight % of at least one aliphatic polyester comprising:

[1211] (a) a dicarboxylic acid component comprising:

[1212] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and

[1213] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;

[1214] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and

[1215] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and

[1216] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.

[1217] In one embodiment, the disclosure is directed to a composition comprising:

[1218] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:

[1219] (a) a dicarboxylic acid component comprising:

[1220] (i) 80 to 100 mole % of terephthalic acid residues;

[1221] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and

[1222] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;

[1223] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and

[1224] (b) a glycol component comprising:

[1225] (i) 5 to 100 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and

[1226] (ii) 0 to 95 mole % of 1,4-cyclohexanedimethanol residues;

[1227] wherein the total mole % of the glycol component is 100 mole %;

[1228] (II) 3 to 15 weight % of at least one aliphatic polyester comprising:

[1229] (a) a dicarboxylic acid component comprising:

[1230] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and

[1231] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;

[1232] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and

[1233] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and

[1234] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.

[1235] In one embodiment, the disclosure is directed to a composition comprising:

[1236] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:

[1237] (a) a dicarboxylic acid component comprising:

[1238] (i) 80 to 100 mole % of terephthalic acid residues;

[1239] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and

[1240] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;

[1241] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and

[1242] (b) a glycol component comprising:

[1243] (i) 5 to 50 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and

[1244] (ii) 50 to 95 mole % of 1,4-cyclohexanedimethanol residues;

[1245] wherein the total mole % of the glycol component is 100 mole %;

- [1246] (II) 3 to 15 weight % of at least one aliphatic polyester comprising:
- [1247] (a) a dicarboxylic acid component comprising:
- [1248] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and
- [1249] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [1250] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [1251] (b) a glycol component comprising 1,4-cyclohexanedimethanol residues;
- [1252] wherein the total mole % of the glycol component is 100 mole %; and
- [1253] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.
- [1254] In one embodiment, the disclosure is directed to a composition comprising:
- [1255] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:
- [1256] (a) a dicarboxylic acid component comprising:
- [1257] (i) 80 to 100 mole % of terephthalic acid residues;
- [1258] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and
- [1259] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [1260] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [1261] (b) a glycol component comprising:
- [1262] (i) 15 to 45 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and
- [1263] (ii) 55 to 85 mole % of 1,4-cyclohexanedimethanol residues;
- [1264] wherein the total mole % of the glycol component is 100 mole %; and
- [1265] (II) 3 to 15 weight % of at least one aliphatic polyester comprising:
- [1266] (a) a dicarboxylic acid component comprising:
- [1267] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and
- [1268] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [1269] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [1270] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and
- [1271] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.
- [1272] In one embodiment, the disclosure is directed to a composition comprising:
- [1273] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:
- [1274] (a) a dicarboxylic acid component comprising:
- [1275] (i) 80 to 100 mole % of terephthalic acid residues;
- [1276] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and
- [1277] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [1278] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [1279] (b) a glycol component comprising:
- [1280] (i) 15 to 40 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and
- [1281] (ii) 60 to 85 mole % of 1,4-cyclohexanedimethanol residues;
- [1282] wherein the total mole % of the glycol component is 100 mole %;
- [1283] (II) 3 to 15 weight % of at least one aliphatic polyester comprising:
- [1284] (a) a dicarboxylic acid component comprising:
- [1285] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and
- [1286] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [1287] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [1288] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and
- [1289] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.
- [1290] In one embodiment, the disclosure is directed to a composition comprising:
- [1291] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:
- [1292] (a) a dicarboxylic acid component comprising:
- [1293] (i) 80 to 100 mole % of terephthalic acid residues;
- [1294] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and
- [1295] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [1296] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [1297] (b) a glycol component comprising:
- [1298] (i) 15 to 30 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and
- [1299] (ii) 70 to 85 mole % of 1,4-cyclohexanedimethanol residues;
- [1300] wherein the total mole % of the glycol component is 100 mole %;
- [1301] (II) 3 to 15 weight % of at least one aliphatic polyester comprising:
- [1302] (a) a dicarboxylic acid component comprising:
- [1303] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and
- [1304] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [1305] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [1306] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and
- [1307] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.
- [1308] In one embodiment, the disclosure is directed to a composition comprising:
- [1309] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:
- [1310] (a) a dicarboxylic acid component comprising:
- [1311] (i) 80 to 100 mole % of terephthalic acid residues;

- [1312] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and
- [1313] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [1314] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [1315] (b) a glycol component comprising:
- [1316] (i) 30 to 40 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and
- [1317] (ii) 60 to 70 mole % of 1,4-cyclohexanedimethanol residues;
- [1318] wherein the total mole % of the glycol component is 100 mole %;
- [1319] (II) 3 to 15 weight % of at least one aliphatic polyester comprising:
- [1320] (a) a dicarboxylic acid component comprising:
- [1321] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and
- [1322] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [1323] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [1324] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and
- [1325] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.
- [1326] In one embodiment, the disclosure is directed to a composition comprising:
- [1327] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:
- [1328] (a) a dicarboxylic acid component comprising:
- [1329] (i) 80 to 100 mole % of terephthalic acid residues;
- [1330] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and
- [1331] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [1332] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [1333] (b) a glycol component comprising:
- [1334] (i) 40 to 100 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and
- [1335] (ii) 0 to 60 mole % of 1,4-cyclohexanedimethanol residues;
- [1336] wherein the total mole % of the glycol component is 100 mole %;
- [1337] (II) 3 to 15 weight % of at least one aliphatic polyester comprising:
- [1338] (a) a dicarboxylic acid component comprising:
- [1339] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and
- [1340] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [1341] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [1342] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and
- [1343] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.
- [1344] In one embodiment, the disclosure is directed to a composition comprising:
- [1345] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:
- [1346] (a) a dicarboxylic acid component comprising:
- [1347] (i) 80 to 100 mole % of terephthalic acid residues;
- [1348] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and
- [1349] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [1350] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [1351] (b) a glycol component comprising:
- [1352] (i) 40 to 99 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and
- [1353] (ii) 1 to 60 mole % of 1,4-cyclohexanedimethanol residues;
- [1354] wherein the total mole % of the glycol component is 100 mole %;
- [1355] (II) 3 to 15 weight % of at least one aliphatic polyester comprising:
- [1356] (a) a dicarboxylic acid component comprising:
- [1357] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and
- [1358] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [1359] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [1360] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and
- [1361] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.
- [1362] In one embodiment, the disclosure is directed to a composition comprising:
- [1363] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:
- [1364] (a) a dicarboxylic acid component comprising:
- [1365] (i) 80 to 100 mole % of terephthalic acid residues;
- [1366] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and
- [1367] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [1368] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [1369] (b) a glycol component comprising:
- [1370] (i) 40 to 95 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and
- [1371] (ii) 5 to 60 mole % of 1,4-cyclohexanedimethanol residues;
- [1372] wherein the total mole % of the glycol component is 100 mole %;
- [1373] (II) 3 to 15 weight % of at least one aliphatic polyester comprising:
- [1374] (a) a dicarboxylic acid component comprising:
- [1375] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and
- [1376] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [1377] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and

- [1378] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and
- [1379] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.
- [1380] In one embodiment, the disclosure is directed to a composition comprising:
- [1381] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:
- [1382] (a) a dicarboxylic acid component comprising:
- [1383] (i) 80 to 100 mole % of terephthalic acid residues;
- [1384] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and
- [1385] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [1386] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [1387] (b) a glycol component comprising:
- [1388] (i) 40 to 90 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and
- [1389] (ii) 10 to 60 mole % of 1,4-cyclohexanedimethanol residues;
- [1390] wherein the total mole % of the glycol component is 100 mole %;
- [1391] (II) 3 to 15 weight % of at least one aliphatic polyester comprising:
- [1392] (a) a dicarboxylic acid component comprising:
- [1393] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and
- [1394] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [1395] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [1396] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and
- [1397] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.
- [1398] In one embodiment, the disclosure is directed to a composition comprising:
- [1399] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:
- [1400] (a) a dicarboxylic acid component comprising:
- [1401] (i) 80 to 100 mole % of terephthalic acid residues;
- [1402] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and
- [1403] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [1404] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [1405] (b) a glycol component comprising:
- [1406] (i) 40 to 85 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and
- [1407] (ii) 15 to 60 mole % of 1,4-cyclohexanedimethanol residues;
- [1408] wherein the total mole % of the glycol component is 100 mole %;
- [1409] (II) 3 to 15 weight % of at least one aliphatic polyester comprising:
- [1410] (a) a dicarboxylic acid component comprising:
- [1411] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and
- [1412] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [1413] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [1414] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and
- [1415] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.
- [1416] In one embodiment, the disclosure is directed to a composition comprising:
- [1417] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:
- [1418] (a) a dicarboxylic acid component comprising:
- [1419] (i) 80 to 100 mole % of terephthalic acid residues;
- [1420] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and
- [1421] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [1422] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [1423] (b) a glycol component comprising:
- [1424] (i) 40 to 80 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and
- [1425] (ii) 20 to 60 mole % of 1,4-cyclohexanedimethanol residues;
- [1426] wherein the total mole % of the glycol component is 100 mole %;
- [1427] (II) 3 to 15 weight % of at least one aliphatic polyester comprising:
- [1428] (a) a dicarboxylic acid component comprising:
- [1429] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and
- [1430] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [1431] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [1432] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and
- [1433] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.
- [1434] In one embodiment, the disclosure is directed to a composition comprising:
- [1435] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:
- [1436] (a) a dicarboxylic acid component comprising:
- [1437] (i) 80 to 100 mole % of terephthalic acid residues;
- [1438] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and
- [1439] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [1440] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and

- [1441] (b) a glycol component comprising:
- [1442] (i) 40 to 70 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and
- [1443] (ii) 30 to 60 mole % of 1,4-cyclohexanedimethanol residues;
- [1444] wherein the total mole % of the glycol component is 100 mole %;
- [1445] (II) 3 to 15 weight % of at least one aliphatic polyester comprising:
- [1446] (a) a dicarboxylic acid component comprising:
- [1447] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and
- [1448] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [1449] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [1450] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and
- [1451] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.
- [1452] In one embodiment, the disclosure is directed to a composition comprising:
- [1453] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:
- [1454] (a) a dicarboxylic acid component comprising:
- [1455] (i) 80 to 100 mole % of terephthalic acid residues;
- [1456] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and
- [1457] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [1458] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [1459] (b) a glycol component comprising:
- [1460] (i) 40 to 60 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and
- [1461] (ii) 40 to 60 mole % of 1,4-cyclohexanedimethanol residues;
- [1462] wherein the total mole % of the glycol component is 100 mole %;
- [1463] (II) 3 to 15 weight % of at least one aliphatic polyester comprising:
- [1464] (a) a dicarboxylic acid component comprising:
- [1465] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and
- [1466] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [1467] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [1468] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and
- [1469] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.
- [1470] In one embodiment, the disclosure is directed to a composition comprising:
- [1471] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:
- [1472] (a) a dicarboxylic acid component comprising:
- [1473] (i) 80 to 100 mole % of terephthalic acid residues;
- [1474] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and
- [1475] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [1476] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [1477] (b) a glycol component comprising:
- [1478] (i) 5 to 100 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and
- [1479] (ii) 0 to 95 mole % of ethylene glycol residues;
- [1480] wherein the total mole % of the glycol component is 100 mole %;
- [1481] (II) 3 to 15 weight % of at least one aliphatic polyester comprising:
- [1482] (a) a dicarboxylic acid component comprising:
- [1483] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and
- [1484] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [1485] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [1486] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and
- [1487] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.
- [1488] In one embodiment, the disclosure is directed to a composition comprising:
- [1489] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:
- [1490] (a) a dicarboxylic acid component comprising:
- [1491] (i) 80 to 100 mole % of terephthalic acid residues;
- [1492] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and
- [1493] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [1494] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [1495] (b) a glycol component comprising:
- [1496] (i) 5 to 50 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and
- [1497] (ii) 50 to 95 mole % of ethylene glycol residues;
- [1498] wherein the total mole % of the glycol component is 100 mole %;
- [1499] (II) 3 to 15 weight % of at least one aliphatic polyester comprising:
- [1500] (a) a dicarboxylic acid component comprising:
- [1501] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and
- [1502] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [1503] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [1504] (b) a glycol component comprising 1,4-cyclohexanedimethanol residues;
- [1505] wherein the total mole % of the glycol component is 100 mole %; and
- [1506] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.

[1507] In one embodiment, the disclosure is directed to a composition comprising:

[1508] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:

[1509] (a) a dicarboxylic acid component comprising:

[1510] (i) 80 to 100 mole % of terephthalic acid residues;

[1511] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and

[1512] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;

[1513] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and

[1514] (b) a glycol component comprising:

[1515] (i) 15 to 45 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and

[1516] (ii) 55 to 85 mole % of ethylene glycol residues;

[1517] wherein the total mole % of the glycol component is 100 mole %;

[1518] (II) 3 to 15 weight % of at least one aliphatic polyester comprising:

[1519] (a) a dicarboxylic acid component comprising:

[1520] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and

[1521] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;

[1522] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and

[1523] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and

[1524] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.

[1525] In one embodiment, the disclosure is directed to a composition comprising:

[1526] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:

[1527] (a) a dicarboxylic acid component comprising:

[1528] (i) 80 to 100 mole % of terephthalic acid residues;

[1529] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and

[1530] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;

[1531] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and

[1532] (b) a glycol component comprising:

[1533] (i) 15 to 40 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and

[1534] (ii) 60 to 85 mole % of ethylene glycol residues;

[1535] wherein the total mole % of the glycol component is 100 mole %;

[1536] (II) 3 to 15 weight % of at least one aliphatic polyester comprising:

[1537] (a) a dicarboxylic acid component comprising:

[1538] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and

[1539] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;

[1540] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and

[1541] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and

[1542] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.

[1543] In one embodiment, the disclosure is directed to a composition comprising:

[1544] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:

[1545] (a) a dicarboxylic acid component comprising:

[1546] (i) 80 to 100 mole % of terephthalic acid residues;

[1547] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and

[1548] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;

[1549] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and

[1550] (b) a glycol component comprising:

[1551] (i) 15 to 30 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and

[1552] (ii) 70 to 85 mole % of ethylene glycol residues;

[1553] wherein the total mole % of the glycol component is 100 mole %;

[1554] (II) 3 to 15 weight % of at least one aliphatic polyester comprising:

[1555] (a) a dicarboxylic acid component comprising:

[1556] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and

[1557] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;

[1558] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and

[1559] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and

[1560] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.

[1561] In one embodiment, the disclosure is directed to a composition comprising:

[1562] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:

[1563] (a) a dicarboxylic acid component comprising:

[1564] (i) 80 to 100 mole % of terephthalic acid residues;

[1565] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and

[1566] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;

[1567] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and

[1568] (b) a glycol component comprising:

[1569] (i) 30 to 40 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and

[1570] (ii) 60 to 70 mole % of ethylene glycol residues;

[1571] wherein the total mole % of the glycol component is 100 mole %;

- [1572] (II) 3 to 15 weight % of at least one aliphatic polyester comprising:
- [1573] (a) a dicarboxylic acid component comprising:
- [1574] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and
- [1575] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [1576] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [1577] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and
- [1578] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.
- [1579] In one embodiment, the disclosure is directed to a composition comprising:
- [1580] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:
- [1581] (a) a dicarboxylic acid component comprising:
- [1582] (i) 80 to 100 mole % of terephthalic acid residues;
- [1583] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and
- [1584] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [1585] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [1586] (b) a glycol component comprising:
- [1587] (i) 40 to 100 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and
- [1588] (ii) 0 to 60 mole % of ethylene glycol residues;
- [1589] wherein the total mole % of the glycol component is 100 mole %;
- [1590] (II) 3 to 15 weight % of at least one aliphatic polyester comprising:
- [1591] (a) a dicarboxylic acid component comprising:
- [1592] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and
- [1593] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [1594] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [1595] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and
- [1596] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.
- [1597] In one embodiment, the disclosure is directed to a composition comprising:
- [1598] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:
- [1599] (a) a dicarboxylic acid component comprising:
- [1600] (i) 80 to 100 mole % of terephthalic acid residues;
- [1601] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and
- [1602] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [1603] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [1604] (b) a glycol component comprising:
- [1605] (i) 40 to 99 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and
- [1606] (ii) 1 to 60 mole % of ethylene glycol residues;
- [1607] wherein the total mole % of the glycol component is 100 mole %;
- [1608] (II) 3 to 15 weight % of at least one aliphatic polyester comprising:
- [1609] (a) a dicarboxylic acid component comprising:
- [1610] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and
- [1611] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [1612] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [1613] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and
- [1614] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.
- [1615] In one embodiment, the disclosure is directed to a composition comprising:
- [1616] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:
- [1617] (a) a dicarboxylic acid component comprising:
- [1618] (i) 80 to 100 mole % of terephthalic acid residues;
- [1619] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and
- [1620] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [1621] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [1622] (b) a glycol component comprising:
- [1623] (i) 40 to 95 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and
- [1624] (ii) 5 to 60 mole % of ethylene glycol residues;
- [1625] wherein the total mole % of the glycol component is 100 mole %;
- [1626] (II) 3 to 15 weight % of at least one aliphatic polyester comprising:
- [1627] (a) a dicarboxylic acid component comprising:
- [1628] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and
- [1629] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [1630] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [1631] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and
- [1632] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.
- [1633] In one embodiment, the disclosure is directed to a composition comprising:
- [1634] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:
- [1635] (a) a dicarboxylic acid component comprising:
- [1636] (i) 80 to 100 mole % of terephthalic acid residues;

- [1637] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and
- [1638] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [1639] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [1640] (b) a glycol component comprising:
 - [1641] (i) 40 to 90 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and
 - [1642] (ii) 10 to 60 mole % of ethylene glycol residues;
- [1643] wherein the total mole % of the glycol component is 100 mole %;
- [1644] (II) 3 to 15 weight % of at least one aliphatic polyester comprising:
 - [1645] (a) a dicarboxylic acid component comprising:
 - [1646] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and
 - [1647] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
 - [1648] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
 - [1649] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and
- [1650] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.
- [1651] In one embodiment, the disclosure is directed to a composition comprising:
 - [1652] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:
 - [1653] (a) a dicarboxylic acid component comprising:
 - [1654] (i) 80 to 100 mole % of terephthalic acid residues;
 - [1655] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and
 - [1656] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
 - [1657] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
 - [1658] (b) a glycol component comprising:
 - [1659] (i) 40 to 85 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and
 - [1660] (ii) 15 to 60 mole % of ethylene glycol residues;
 - [1661] wherein the total mole % of the glycol component is 100 mole %;
 - [1662] (II) 3 to 15 weight % of at least one aliphatic polyester comprising:
 - [1663] (a) a dicarboxylic acid component comprising:
 - [1664] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and
 - [1665] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
 - [1666] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
 - [1667] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and
 - [1668] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.
- [1669] In one embodiment, the disclosure is directed to a composition comprising:
 - [1670] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:
 - [1671] (a) a dicarboxylic acid component comprising:
 - [1672] (i) 80 to 100 mole % of terephthalic acid residues;
 - [1673] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and
 - [1674] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
 - [1675] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
 - [1676] (b) a glycol component comprising:
 - [1677] (i) 40 to 80 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and
 - [1678] (ii) 20 to 60 mole % of ethylene glycol residues;
 - [1679] wherein the total mole % of the glycol component is 100 mole %;
 - [1680] (II) 3 to 15 weight % of at least one aliphatic polyester comprising:
 - [1681] (a) a dicarboxylic acid component comprising:
 - [1682] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and
 - [1683] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
 - [1684] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
 - [1685] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and
 - [1686] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.
- [1687] In one embodiment, the disclosure is directed to a composition comprising:
 - [1688] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:
 - [1689] (a) a dicarboxylic acid component comprising:
 - [1690] (i) 80 to 100 mole % of terephthalic acid residues;
 - [1691] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and
 - [1692] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
 - [1693] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
 - [1694] (b) a glycol component comprising:
 - [1695] (i) 40 to 70 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and
 - [1696] (ii) 30 to 60 mole % of ethylene glycol residues;
 - [1697] wherein the total mole % of the glycol component is 100 mole %;
 - [1698] (II) 3 to 15 weight % of at least one aliphatic polyester comprising:
 - [1699] (a) a dicarboxylic acid component comprising:
 - [1700] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and
 - [1701] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
 - [1702] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and

- [1703] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and
- [1704] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.
- [1705] In one embodiment, the disclosure is directed to a composition comprising:
- [1706] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:
- [1707] (a) a dicarboxylic acid component comprising:
- [1708] (i) 80 to 100 mole % of terephthalic acid residues;
- [1709] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and
- [1710] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [1711] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [1712] (b) a glycol component comprising:
- [1713] (i) 40 to 60 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and
- [1714] (ii) 40 to 60 mole % of ethylene glycol residues;
- [1715] wherein the total mole % of the glycol component is 100 mole %;
- [1716] (II) 3 to 15 weight % of at least one aliphatic polyester comprising:
- [1717] (a) a dicarboxylic acid component comprising:
- [1718] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and
- [1719] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [1720] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [1721] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and
- [1722] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.
- [1723] In one embodiment, the disclosure is directed to a composition comprising:
- [1724] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:
- [1725] (a) a dicarboxylic acid component comprising:
- [1726] (i) 80 to 100 mole % of terephthalic acid residues;
- [1727] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and
- [1728] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [1729] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [1730] (b) a glycol component comprising:
- [1731] (i) 50 to 95 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and
- [1732] (ii) 5 to 50 mole % of ethylene glycol residues;
- [1733] wherein the total mole % of the glycol component is 100 mole %;
- [1734] (II) 3 to 15 weight % of at least one aliphatic polyester comprising:
- [1735] (a) a dicarboxylic acid component comprising:
- [1736] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and
- [1737] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [1738] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [1739] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and
- [1740] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.
- [1741] In one embodiment, the disclosure is directed to a composition comprising:
- [1742] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:
- [1743] (a) a dicarboxylic acid component comprising:
- [1744] (i) 80 to 100 mole % of terephthalic acid residues;
- [1745] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and
- [1746] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [1747] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [1748] (b) a glycol component comprising:
- [1749] (i) 50 to 80 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and
- [1750] (ii) 20 to 50 mole % of ethylene glycol residues;
- [1751] wherein the total mole % of the glycol component is 100 mole %;
- [1752] (II) 3 to 15 weight % of at least one aliphatic polyester comprising:
- [1753] (a) a dicarboxylic acid component comprising:
- [1754] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and
- [1755] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [1756] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [1757] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and
- [1758] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.
- [1759] In one embodiment, the disclosure is directed to a composition comprising:
- [1760] (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:
- [1761] (a) a dicarboxylic acid component comprising:
- [1762] (i) 80 to 100 mole % of terephthalic acid residues;
- [1763] (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and
- [1764] (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [1765] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and

- [1766] (b) a glycol component comprising:
- [1767] (i) 50 to 75 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and
- [1768] (ii) 25 to 50 mole % of ethylene glycol residues;
- [1769] wherein the total mole % of the glycol component is 100 mole %;
- [1770] (II) 3 to 15 weight % of at least one aliphatic polyester comprising:
- [1771] (a) a dicarboxylic acid component comprising:
- [1772] (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and
- [1773] (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
- [1774] wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
- [1775] (b) a glycol component comprising 1,4 cyclohexanedimethanol residues; wherein the total mole % of the glycol component is 100 mole %; and
- [1776] (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.

[1777] In one embodiment, all embodiments of the invention can contain 20 to 80 weight % of the aliphatic-aromatic polyester and 20 to 80 weight % of the polycarbonate; or 20 to 60 weight % of the aliphatic-aromatic polyester and 40 to 80 weight % of the polycarbonate; or 30 to 60 weight % of the aliphatic-aromatic polyester and 40 to 70 weight % of the polycarbonate; or 40 to 60 weight % of the aliphatic-aromatic polyester and 40 to 80 weight % of the polycarbonate; or 40 to 50 weight % of the aliphatic-aromatic polyester and 50 to 60 weight % of the polycarbonate.

[1778] The present disclosure may be understood more readily by reference to the following detailed description of certain embodiments and the working examples.

[1779] The polymer blends useful in the present disclosure have a unique combination of two or more physical properties such as clarity, toughness, high glass transition temperatures, heat resistance, chemical resistance, miscibility and/or good flowability, while retaining good processability thereby easily permitting them to be formed into articles.

[1780] As used herein, the term "polyester" is intended to include "copolyesters" and is understood to mean a synthetic polymer prepared by the reaction of one or more difunctional carboxylic acids and/or multifunctional carboxylic acids with one or more difunctional hydroxyl compounds and/or multifunctional hydroxyl compounds. Typically the difunctional carboxylic acid can be a dicarboxylic acid and the difunctional hydroxyl compound can be a dihydric alcohol such as, for example, a glycol. Furthermore, as used in this application, the term "diacid" or "dicarboxylic acid" includes multifunctional acids, such as branching agents. The term "glycol" as used in this application includes, but is not limited to, diols, glycols, and/or multifunctional hydroxyl compounds. Alternatively, the difunctional carboxylic acid may be a hydroxy carboxylic acid such as, for example, p-hydroxybenzoic acid, and the difunctional hydroxyl compound may be an aromatic nucleus bearing 2 hydroxyl substituents such as, for example, hydroquinone.

[1781] For purposes of the present disclosure, an aromatic-aliphatic polyester refers to a polyester in which the carboxylic acid residues are derived from aromatic carboxylic acid and the glycol residues are derived from aliphatic alcohols. An aliphatic polyester refers to a polyester in which both the

carboxylic acid residues and the glycol residues are derived from aliphatic carboxylic acids and aliphatic alcohols respectively.

[1782] The term "residue", as used herein, means any organic structure incorporated into a polymer through a polycondensation and/or an esterification reaction from the corresponding monomer. The term "repeating unit", as used herein, means an organic structure having a dicarboxylic acid residue and a diol residue bonded through a carbonyloxy group. Thus, for example, the dicarboxylic acid residues may be derived from a dicarboxylic acid monomer or its associated acid halides, esters, salts, anhydrides, or mixtures thereof. As used herein, therefore, the term dicarboxylic acid is intended to include dicarboxylic acids and any derivative of a dicarboxylic acid, including its associated isomers, acid halides, esters, half-esters, salts, half-salts, anhydrides, mixed anhydrides, or mixtures thereof, useful in a reaction process with a diol to make polyester.

[1783] The term "polycarbonate," as used herein, is intended to include "copolycarbonates" and is understood to mean the condensation product of a carbonate source and a diol source.

[1784] As used herein, the term "terephthalic acid" is intended to include terephthalic acid itself and residues thereof as well as any derivative of terephthalic acid, including its associated isomers, acid halides, esters, half-esters, salts, half-salts, anhydrides, mixed anhydrides, or mixtures thereof or residues thereof useful in a reaction process with a diol to make polyester.

[1785] In one embodiment of the present disclosure, terephthalic acid may be used as starting material for the aromatic-aliphatic polyester. In another embodiment, isophthalic acid may be used as starting material. In another embodiment, mixtures of terephthalic acid and isophthalic acid may be used as starting material and/or as an intermediate material.

[1786] The polyesters used in the present disclosure typically can be prepared from dicarboxylic acids and diols which react in substantially equal proportions and are incorporated into the polyester polymer component and polymer blends as their corresponding residues. The polyesters of the present disclosure, therefore, can contain substantially equal molar proportions of acid residues (100 mole %) and diol (and/or multifunctional hydroxyl compounds) residues (100 mole %) such that the total moles of repeating units is equal to 100 mole %. The mole percentages provided in the present disclosure, therefore, may be based on the total moles of acid residues, the total moles of diol residues, or the total moles of repeating units. For example, a polyester containing 30 mole % isophthalic acid, based on the total acid residues, means the polyester contains 30 mole % isophthalic acid residues out of a total of 100 mole % acid residues. Thus, there are 30 moles of isophthalic acid residues among every 100 moles of acid residues. In another example, a polyester containing 30 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol, based on the total diol residues, means the polyester contains 30 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues out of a total of 100 mole % diol residues. Thus, there are 30 moles of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues among every 100 moles of diol residues.

I. Aromatic-Aliphatic Polyesters and Aliphatic Polyesters

I.A Glycol Component of the Aromatic-Aliphatic Polyesters

[1787] In other aspects of the present disclosure, the glycol component for the aromatic-aliphatic polyesters of the poly-

[1788] In other aspects of the present disclosure, the glycol component for the aromatic-aliphatic polyesters of the polymer blends disclosed herein include but are not limited to at least one of the following combinations of ranges: 5 to 100 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 0 to 95 mole % 1,4-cyclohexanedimethanol; 5 to 95 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 5 to 95 mole % 1,4-cyclohexanedimethanol; 5 to 90 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 10 to 95 mole % 1,4-cyclohexanedimethanol; 5 to 85 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 15 to 95 mole % 1,4-cyclohexanedimethanol; 5 to 80 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 20 to 95 mole % 1,4-cyclohexanedimethanol; 5 to 75 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 25 to 95 mole % 1,4-cyclohexanedimethanol; 5 to 70 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 30 to 95 mole % 1,4-cyclohexanedimethanol; 5 to 65 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 35 to 95 mole % 1,4-cyclohexanedimethanol; 5 to 60 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 40 to 95 mole % 1,4-cyclohexanedimethanol; 5 to 55 mole % 2,2,4,4-tetramethyl-

[1789] In other aspects of the present disclosure, the glycol component for the aromatic-aliphatic polyesters of the polymer blends disclosed herein include but are not limited to at least one of the following combinations of ranges: 10 to 100 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 0 to 90 mole % 1,4-cyclohexanedimethanol; 10 to 95 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 5 to 90 mole % 1,4-cyclohexanedimethanol; 10 to 90 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 10 to 90 mole % 1,4-cyclohexanedimethanol; 10 to 85 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 15 to 90 mole % 1,4-cyclohexanedimethanol; 10 to 80 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 20 to 90 mole % 1,4-cyclohexanedimethanol; 10 to 75 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 25 to 90 mole % 1,4-cyclohexanedimethanol; 10 to 70 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 30 to 90 mole % 1,4-cyclohexanedimethanol; 10 to 65 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 35 to 90 mole % 1,4-cyclohexanedimethanol; 10 to 60 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 40 to 90 mole % 1,4-cyclohexanedimethanol; 10 to 55 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 45 to 90 mole % 1,4-cyclohexanedimethanol; 10 to 50 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 50 to 90 mole % 1,4-cyclohexanedimethanol; 10 to 45 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 55 to 90 mole % 1,4-cyclohexanedimethanol; 10 to 40 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 60 to 90 mole % 1,4-cyclohexanedimethanol; 10 to 35 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 65 to 90 mole % 1,4-cyclohexanedimethanol; 10 to 30 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 70 to 90 mole % 1,4-cyclohexanedimethanol; 10 to 25 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 75 to 90 mole % 1,4-cyclohexanedimethanol; 10 to 20 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 80 to 90 mole % 1,4-cyclohexanedimethanol; and 10 to 15 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 85 to 90 mole % 1,4-cyclohexanedimethanol.

[1790] In other aspects of the present disclosure, the glycol component for the aromatic-aliphatic polyesters of the polymer blends disclosed herein include but are not limited to at least one of the following combinations of ranges: 15 to 100

cyclohexanedimethanol; 55 to 80 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 20 to 45 mole % 1,4-cyclohexanedimethanol; 55 to 75 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 25 to 45 mole % 1,4-cyclohexanedimethanol; 55 to 70 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 30 to 45 mole % 1,4-cyclohexanedimethanol; 55 to 65 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 35 to 45 mole % 1,4-cyclohexanedimethanol; and 55 to 60 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 30 to 45 mole % 1,4-cyclohexanedimethanol.

[1799] In other aspects of the present disclosure, the glycol component for the aromatic-aliphatic polyesters of the polymer blends disclosed herein include but are not limited to at least one of the following combinations of ranges: 60 to 100 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 0 to 40 mole % 1,4-cyclohexanedimethanol; 60 to 95 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 5 to 40 mole % 1,4-cyclohexanedimethanol; 60 to 90 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 10 to 40 mole % 1,4-cyclohexanedimethanol; 60 to 85 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 15 to 40 mole % 1,4-cyclohexanedimethanol; 60 to 80 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 20 to 40 mole % 1,4-cyclohexanedimethanol; 60 to 75 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 25 to 40 mole % 1,4-cyclohexanedimethanol; 60 to 70 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 30 to 40 mole % 1,4-cyclohexanedimethanol; and 60 to 65 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 35 to 40 mole % 1,4-cyclohexanedimethanol.

[1800] In other aspects of the present disclosure, the glycol component for the aromatic-aliphatic polyesters of the polymer blends disclosed herein include but are not limited to at least one of the following combinations of ranges: 65 to 100 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 0 to 35 mole % 1,4-cyclohexanedimethanol; 65 to 95 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 5 to 35 mole % 1,4-cyclohexanedimethanol; 65 to 90 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 10 to 35 mole % 1,4-cyclohexanedimethanol; 65 to 85 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 15 to 35 mole % 1,4-cyclohexanedimethanol; 65 to 80 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 20 to 35 mole % 1,4-cyclohexanedimethanol; 65 to 75 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 25 to 35 mole % 1,4-cyclohexanedimethanol; and 65 to 70 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 30 to 35 mole % 1,4-cyclohexanedimethanol.

[1801] In other aspects of the present disclosure, the glycol component for the aromatic-aliphatic polyesters of the polymer blends disclosed herein include but are not limited to at least one of the following combinations of ranges: 70 to 100 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 0 to 30 mole % 1,4-cyclohexanedimethanol; 70 to 95 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 5 to 30 mole % 1,4-cyclohexanedimethanol; 70 to 90 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 10 to 30 mole % 1,4-cyclohexanedimethanol; 70 to 85 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 15 to 30 mole % 1,4-cyclohexanedimethanol; 70 to 80 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 20 to 30 mole % 1,4-

cyclohexanedimethanol; and 70 to 75 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 25 to 30 mole % 1,4-cyclohexanedimethanol.

[1802] In other aspects of the present disclosure, the glycol component for the aromatic-aliphatic polyesters of the polymer blends disclosed herein include but are not limited to at least one of the following combinations of ranges: 75 to 100 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 0 to 25 mole % 1,4-cyclohexanedimethanol; 75 to 95 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 5 to 25 mole % 1,4-cyclohexanedimethanol; 75 to 90 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 10 to 25 mole % 1,4-cyclohexanedimethanol; 75 to 85 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 15 to 25 mole % 1,4-cyclohexanedimethanol; and 75 to 80 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 20 to 25 mole % 1,4-cyclohexanedimethanol.

[1803] In other aspects of the present disclosure, the glycol component for the aromatic-aliphatic polyesters of the polymer blends disclosed herein include but are not limited to at least one of the following combinations of ranges: 80 to 100 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 0 to 20 mole % 1,4-cyclohexanedimethanol; 80 to 95 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 5 to 20 mole % 1,4-cyclohexanedimethanol; 80 to 90 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 10 to 20 mole % 1,4-cyclohexanedimethanol; and 80 to 85 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 15 to 20 mole % 1,4-cyclohexanedimethanol.

[1804] In other aspects of the present disclosure, the glycol component for the aromatic-aliphatic polyesters of the polymer blends disclosed herein include but are not limited to at least one of the following combinations of ranges: 85 to 100 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 0 to 15 mole % 1,4-cyclohexanedimethanol; 85 to 95 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 5 to 15 mole % 1,4-cyclohexanedimethanol; 85 to 90 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 10 to 15 mole % 1,4-cyclohexanedimethanol; 90 to 100 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 0 to 10 mole % 1,4-cyclohexanedimethanol; 90 to 95 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 5 to 10 mole % 1,4-cyclohexanedimethanol; and 95 to 100 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 0 to 5 mole % 1,4-cyclohexanedimethanol.

[1805] In some embodiments of the present disclosure, ethylene glycol may be used in place of, or in a mixture with, 1,4-cyclohexanedimethanol in the glycol component of the aromatic-aliphatic polyester. In certain embodiments, the glycol component for the aromatic-aliphatic polyesters of the polymer blends disclosed herein include but are not limited to at least one of the following ranges: 1 to 99 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 1 to 99 mole % ethylene glycol; 5 to 99 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 1 to 95 mole % ethylene glycol; 10 to 99 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 1 to 90 mole % ethylene glycol; 15 to 99 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 1 to 85 mole % ethylene glycol; 20 to 99 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 1 to 80 mole % ethylene glycol; 1 to 95 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 5 to 99 mole % ethylene glycol; 5 to 95 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 5 to 95 mole % ethylene glycol; 10 to 95 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 5 to 90 mole % ethylene gly-

col; 15 to 95 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 5 to 85 mole % ethylene glycol; 20 to 95 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 5 to 80 mole % ethylene glycol; 1 to 90 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 10 to 99 mole % ethylene glycol; 5 to 90 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 10 to 95 mole % ethylene glycol; 10 to 90 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 10 to 90 mole % ethylene glycol; 15 to 90 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 10 to 85 mole % ethylene glycol; 20 to 90 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 10 to 80 mole % ethylene glycol; less than 99 to greater than 90 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and greater than 1 to less than 10 mole % ethylene glycol; less than 97 to greater than 90 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and greater than 3 to less than 10 mole % ethylene glycol; or less than 95 to greater than 90 mole % 2,2,4,4-tetramethyl-1,3-cyclobutanediol and greater than 5 to less than 10 mole % ethylene glycol.

[1806] For the desired aromatic-aliphatic polyester, the molar ratio of cis/trans 2,2,4,4-tetramethyl-1,3-cyclobutanediol can vary from 1 to 0 and from 0 to 1, which includes the pure form of each isomer and mixtures thereof. In certain embodiments, the molar percentages for cis and/or trans 2,2,4,4-tetramethyl-1,3-cyclobutanediol are greater than 40 mole % cis and less than 60 mole % trans; or greater than 50 mole % cis and less than 50 mole % trans; or 30 to 70 mole % cis and 70 to 30% trans; or 40 to 60 mole % cis and 60 to 40 mole % trans; or 50 to 70 mole % trans and 50 to 30% cis or 50 to 70 mole % cis and 50 to 30% trans; or greater than 70 mole cis and less than 30 mole % trans; wherein the total sum of the mole percentages for cis- and trans-2,2,4,4-tetramethyl-1,3-cyclobutanediol is equal to 100 mole %.

[1807] The molar ratio of cis/trans 1,4-cyclohexanedimethanol can vary from 1 to 0 and from 0 to 1, which includes the pure form of each isomer and mixtures thereof. In certain embodiments, the molar percentages for cis and/or trans 1,4-cyclohexanedimethanol are less than 50 mole % cis and greater than 50 mole % trans; or 25 to 75 mole % cis and 75 to 25% trans; or 40 to 60 mole % cis and 60 to 40 mole % trans; wherein the total sum of the mole percentages for cis- and trans-1,4-cyclohexanedimethanol is equal to 100 mole %.

[1808] The glycol component of the aromatic-aliphatic polyester polyesters useful in the present disclosure can contain up to 10 mole % of one or more modifying glycols which are not 2,2,4,4-tetramethyl-1,3-cyclobutanediol or 1,4-cyclohexanedimethanol. In one embodiment, the polyesters useful in the present disclosure can contain up to 5 mole % one or more modifying glycols. In another embodiment, the polyesters useful in the present disclosure can contain up to 3 mole % of one or more modifying glycols. In another embodiment, the polyesters useful in the present disclosure can contain 0 mole % modifying glycols. Certain embodiments can contain 0.01 or more mole %, such as 0.1 or more mole %, 1 or more mole %, or 5 or more mole % of one or more modifying glycols. Thus, if present, it is contemplated that the amount of one or more modifying glycols can range from any of these preceding endpoint values including, for example, from 0.01 to 10 mole %, from 0.01 to 5 mole %, and from 0.1 to 3 mole %.

[1809] Modifying glycols useful in the aromatic-aliphatic polyesters of the polymer blends of the present disclosure refer to diols other than 2,2,4,4-tetramethyl-1,3-cyclobutanediol and 1,4-cyclohexanedimethanol and may contain 2 to 16 carbon atoms. Examples of suitable modifying glycols

include, but are not limited to, ethylene glycol, 1,2-propanediol, 1,3-propanediol, neopentyl glycol, 1,4-butanediol, 1,5-pentanediol, 1,6-hexanediol, p-xylene glycol, or mixtures thereof. In certain embodiments, the aromatic-aliphatic polyesters of the polymer blends useful in the present disclosure may be modified with polyethylene glycols or polytetramethylene glycols.

I.B Carboxylic Acid Component of the Aromatic-Aliphatic Polyesters

[1810] In certain embodiments, terephthalic acid or an ester thereof, or a mixture of terephthalic acid and an ester thereof, makes up most or all of the dicarboxylic acid component used to form the aromatic-aliphatic polyesters useful in the present disclosure. In certain embodiments, terephthalic acid residues can make up a portion or all of the dicarboxylic acid component used to form the present polyester at a concentration of at least 70 mole %, such as at least 80 mole %, at least 90 mole %, at least 95 mole %, at least 99 mole %, or 100 mole %. Suitable examples of dicarboxylic acid esters include, but are not limited to, the dimethyl, dipropyl, diisopropyl, dibutyl, and diphenyl esters.

[1811] In addition to terephthalic acid, the dicarboxylic acid component of the aromatic-aliphatic polyester useful in the present disclosure can comprise up to 25 mole %, up to 20 mole %, up to 15 mole %, up to 10 mole %, up to 5 mole %, or up to 1 mole % of one or more modifying aromatic dicarboxylic acids. Yet another embodiment may contain 0 mole % modifying aromatic dicarboxylic acids. Thus, if present, it is contemplated that the amount of one or more modifying aromatic dicarboxylic acids can range from any of these preceding endpoint values including, for example, from 0.01 to 25 mole %, 0.01 to 20 mole %, from 0.01 to 15 mole %, from 0.01 to 10 mole %, from 0.01 to 5 mole % and from 0.01 to 1 mole. In one embodiment, modifying aromatic dicarboxylic acids that may be used in the present disclosure include but are not limited to those having up to 20 carbon atoms, and which can be linear, para-oriented, or symmetrical. Examples of modifying aromatic dicarboxylic acids which may be used in the present disclosure include, but are not limited to, 4,4'-biphenyldicarboxylic acid, 1,5-, 2,6-, 2,7-naphthalenedicarboxylic acid, 4,4'-oxydibenzoic acid, trans-4,4'-stilbenedicarboxylic acid, and esters thereof.

[1812] The carboxylic acid component of the aromatic-aliphatic polyesters useful in the present disclosure can be further modified with up to 20 mole %, such as up to 15 mole %, or up to 10 mole %, or up to 5 mole %, or up to 1 mole % of one or more aliphatic dicarboxylic acids containing 6-12 carbon atoms, such as, for example, succinic, glutaric, adipic, sebacic, suberic, azelaic, decanedicarboxylic, and dodecanedicarboxylic acids. Certain embodiments can also comprise 0.01 or more mole %, such as 0.1 or more mole %, 1 or more mole %, 5 or more mole %, or 10 or more mole % of one or more modifying aliphatic dicarboxylic acids. Yet another embodiment may contain 0 mole % modifying aliphatic dicarboxylic acids. Thus, if present, it is contemplated that the amount of one or more modifying aliphatic dicarboxylic acids can range from any of these preceding endpoint values including, for example, from 0.01 to 10 mole % and from 0.1 to 10 mole %. The total mole % of the dicarboxylic acid component is 100 mole %.

I.C Glycol Component of the Aliphatic Polyesters

[1813] In addition to 1,4-cyclohexanedimethanol, the glycol component of the aliphatic polyesters useful in the present

disclosure can contain up to 10 mole % of one or more modifying glycols which are not 1,4-cyclohexanedimethanol. In one embodiment, the aliphatic polyesters useful in the present disclosure can contain up to 5 mole % one or more modifying glycols. In another embodiment, the polyesters useful in the present disclosure can contain up to 3 mole % of one or more modifying glycols. In another embodiment, the polyesters useful in the present disclosure can contain 0 mole % modifying glycols. Certain embodiments can contain 0.01 or more mole %, such as 0.1 or more mole %, 1 or more mole %, or 5 or more mole % of one or more modifying glycols. Thus, if present, it is contemplated that the amount of one or more modifying glycols can range from any of these preceding endpoint values including, for example, from 0.01 to 10 mole %, from 0.01 to 5 mole %, and from 0.1 to 3 mole %.

[1814] Modifying glycols useful in the aliphatic polyesters of the polymer blends of the present disclosure refer to diols other than 1,4-cyclohexanedimethanol and may contain 2 to 16 carbon atoms. Examples of suitable modifying glycols include, but are not limited to, ethylene glycol, 1,2-propanediol, 1,3-propanediol, neopentyl glycol, 1,4-butanediol, 1,5-pentanediol, 1,6-hexanediol, or mixtures thereof. In certain embodiments, the aliphatic polyesters of the polymer blends useful in the present disclosure may be modified with polyethylene glycols or polytetramethylene glycols.

[1815] For the desired aliphatic polyester, the molar ratio of cis/trans 1,4-cyclohexane dicarboxylic acid can vary from 1 to 0 and from 0 to 1, which includes the pure form of each isomer and mixtures thereof. In certain embodiments, the molar percentages for cis and/or trans 1,4-cyclohexane dicarboxylic acid are less than 50 mole % cis and greater than 50 mole % trans; or less than 25 mole % cis and greater than 75 mole % trans; or 5 to 95 mole % cis and 95 to 5% trans; or 5 to 75 mole % cis and 95 to 25% trans; or 5 to 50 mole % cis and 95 to 50 mole % trans; or 5 to 25 mole % cis and 95 to 75% trans; wherein the total sum of the mole percentages for cis- and trans-1,4-cyclohexane dicarboxylic acid is equal to 100 mole %.

[1816] For the desired aliphatic polyester, the molar ratio of cis/trans 1,4-cyclohexanedimethanol can vary from 1 to 0 and from 0 to 1, which includes the pure form of each isomer and mixtures thereof. In certain embodiments, the molar percentages for cis and/or trans 1,4-cyclohexanedimethanol are less than 50 mole % cis and greater than 50 mole % trans; or less than 35 mole % cis and greater than 65 mole % trans; or 10 to 95 mole % cis and 90 to 5% trans; or 10 to 75 mole % cis and 90 to 25% trans; or 10 to 50 mole % cis and 90 to 50 mole % trans; or 25 to 75 mole % cis and 75 to 25% trans; or 25 to 50 mole % cis and 75 to 50 mole % trans; wherein the total sum of the mole percentages for cis- and trans-1,4-cyclohexanedimethanol is equal to 100 mole %.

I.D Carboxylic Acid Component of the Aliphatic Polyesters

[1817] In certain embodiments, 1,4-cyclohexane dicarboxylic acid or an ester thereof, or a mixture of 1,4-cyclohexane dicarboxylic acid and an ester thereof, makes up most or all of the dicarboxylic acid component used to form the aliphatic polyesters useful in the present disclosure. In certain embodiments, 1,4-cyclohexane dicarboxylic acid residues can make up a portion or all of the dicarboxylic acid component used to form the aliphatic polyester at a concentration of at least 75 mole %, such as at least 80 mole %, at least 85 mole %, at least 90 mole %, at least 95 mole %, at least 99 mole %, or 100 mole %. Suitable examples of dicarboxylic acid esters

include, but are not limited to, the dimethyl, dipropyl, diisopropyl, dibutyl, and diphenyl esters.

[1818] In addition to 1,4-cyclohexane dicarboxylic acid, the dicarboxylic acid component of the aliphatic polyester useful in the present disclosure can comprise up to 25 mole %, up to 20 mole %, up to 15 mole %, up to 10 mole %, up to 5 mole %, or up to 1 mole % of one or more modifying aliphatic dicarboxylic acids containing 6-12 carbon atoms, such as, for example, succinic, glutaric, adipic, sebacic, suberic, azelaic, decanedicarboxylic, and dodecanedicarboxylic acids. Certain embodiments can also comprise 0.01 or more mole %, such as 0.1 or more mole %, 1 or more mole %, 5 or more mole %, or 10 or more mole % of one or more modifying aliphatic dicarboxylic acids. Yet another embodiment may contain 0 mole % modifying aliphatic dicarboxylic acids. Thus, if present, it is contemplated that the amount of one or more modifying aliphatic dicarboxylic acids can range from any of these preceding endpoint values including, for example, from 0.01 to 10 mole % and from 0.1 to 10 mole %. The total mole % of the dicarboxylic acid component is 100 mole %.

[1819] For certain embodiments of the present disclosure, the aromatic-aliphatic polyesters and aliphatic polyesters, independently of one another, may exhibit at least one of the following inherent viscosities as determined in 60/40 (wt/wt) phenol/tetrachloroethane at a concentration of 0.5 g/100 ml at 25° C.: 0.10 to 1.20 dL/g; 0.10 to 1.10 dL/g; 0.10 to 1.00 dL/g; 0.10 to 0.90 dL/g; 0.10 to 0.80 dL/g; 0.10 to 0.70 dL/g; 0.10 to 0.60 dL/g; 0.10 to 0.50 dL/g; 0.10 to 0.40 dL/g; 0.10 to 0.30 dL/g; 0.10 to 0.20 dL/g; 0.20 to 1.20 dL/g; 0.20 to 1.10 dL/g; 0.20 to 1.00 dL/g; 0.20 to 0.90 dL/g; 0.20 to 0.80 dL/g; 0.20 to 0.70 dL/g; 0.20 to 0.60 dL/g; 0.20 to 0.50 dL/g; 0.20 to 0.40 dL/g; 0.20 to 0.30 dL/g; 0.30 to 1.20 dL/g; 0.30 to 1.10 dL/g; 0.30 to 1.00 dL/g; 0.30 to 0.90 dL/g; 0.30 to 0.80 dL/g; 0.30 to 0.70 dL/g; 0.30 to 0.60 dL/g; 0.30 to 0.50 dL/g; 0.30 to 0.40 dL/g; 0.40 to 1.20 dL/g; 0.40 to 1.10 dL/g; 0.40 to 1.00 dL/g; 0.40 to 0.90 dL/g; 0.40 to 0.80 dL/g; 0.40 to 0.70 dL/g; 0.40 to 0.60 dL/g; 0.40 to 0.50 dL/g; 0.50 to 1.20 dL/g; 0.50 to 1.10 dL/g; 0.50 to 1.00 dL/g; 0.50 to 0.90 dL/g; 0.50 to 0.80 dL/g; 0.50 to 0.70 dL/g; 0.50 to 0.60; 0.60 to 1.20 dL/g; 0.60 to 1.10 dL/g; 0.60 to 1.00 dL/g; 0.60 to 0.90 dL/g; 0.60 to 0.80 dL/g; 0.60 to 0.70 dL/g; 0.70 to 1.20 dL/g; 0.70 to 1.10 dL/g; 0.70 to 1.00 dL/g; 0.70 to 0.90 dL/g; 0.70 to 0.80 dL/g; 0.80 to 1.20 dL/g; 0.80 to 1.10 dL/g; 0.80 to 1.00 dL/g; 0.80 to 0.90 dL/g; 0.90 to 1.20 dL/g; 0.90 to 1.10 dL/g; 0.90 to 1.00 dL/g; 1.00 to 1.20 dL/g; and 1.00 to 1.10 dL/g.

[1820] The glass transition temperature (T_g) of the polyester blends or the polyesters useful in the invention may be determined, for example, by using a Perkin Elmer differential scanning calorimeter (DSC) instrument at a scan rate of 20° C./min. In some aspects of the present disclosure, the T_g of the polyesters can be at least one of the following ranges: 80 to 130° C.; 80 to 125° C.; 80 to 120° C.; 80 to 115° C.; 80 to 110° C.; 80 to 105° C.; 80 to 100° C.; 80 to 95° C.; 80 to 90° C.; 80 to 85° C.; 85 to 130° C.; 85 to 125° C.; 85 to 120° C.; 85 to 115° C.; 85 to 110° C.; 85 to 105° C.; 85 to 100° C.; 85 to 95° C.; 85 to 90° C.; 90 to 130° C.; 90 to 125° C.; 90 to 120° C.; 90 to 115° C.; 90 to 110° C.; 90 to 105° C.; 90 to 100° C.; 90 to 95° C.; 95 to 130° C.; 95 to 125° C.; 95 to 120° C.; 95 to 115° C.; 95 to 110° C.; 95 to 100° C.; 100 to 130° C.; 100 to 125° C.; 100 to 120° C.; 100 to 115° C.; 100 to 110° C.; 100 to 105° C.; 105 to 130° C.; 105 to 125° C.; 105 to 120° C.; 105 to 115° C.; 105 to 110° C.; 110 to 130° C.; 110 to 125° C.; 110 to 120° C.; 110 to 115° C.; 115 to 130° C.; 115 to 125° C.; 115 to 120° C.; 120 to 130° C.; 120 to 125° C.; and 125 to 130° C.

[1821] Thermal stabilizers for polyesters are compounds that stabilize polyesters during polyester manufacture and/or post polymerization. These thermal stabilizers can be present in either of the aromatic-aliphatic polyesters or in the aliphatic polyesters useful in the present disclosure and include, but are not limited to, phosphorous compounds, such as, for example, phosphoric acid, phosphorous acid, phosphonic acid, phosphinic acid, phosphonous acid, and various esters and salts thereof. The esters can be alkyl, branched alkyl, substituted alkyl, difunctional alkyl, alkyl ethers, aryl, and substituted aryl. In one embodiment, the number of ester groups present in the particular phosphorous compound can vary from zero up to the maximum allowable based on the number of hydroxyl groups present on the thermal stabilizer used. The term "thermal stabilizer" is intended to include the reaction product(s) thereof. The term "reaction product" as used in connection with the thermal stabilizers of the present disclosure refers to any product of a polycondensation or esterification reaction between the thermal stabilizer and any of the monomers used in making the polyester as well as the product of a polycondensation or esterification reaction between the catalyst and any other type of additive.

[1822] In one embodiment, the thermal stabilizer(s) can be an organic compound such as, for example, a phosphorus acid ester containing halogenated or non-halogenated organic substituents. The thermal stabilizer can comprise a wide range of phosphorus compounds well-known in the art such as, for example, phosphines, phosphites, phosphinites, phosphonites, phosphinates, phosphonates, phosphine oxides, and phosphates. Examples of thermal stabilizers include tributyl phosphate, triethyl phosphate, tri-butoxyethyl phosphate, t-butylphenyl diphenyl phosphate, 2-ethylhexyl diphenyl phosphate, ethyl dimethyl phosphate, isodecyl diphenyl phosphate, trilauryl phosphate, triphenyl phosphate, tricresyl phosphate, trixylenyl phosphate, t-butylphenyl diphenylphosphate, resorcinol bis(diphenyl phosphate), tribenzyl phosphate, phenyl ethyl phosphate, trimethyl thionophosphate, phenyl ethyl thionophosphate, dimethyl methylphosphonate, diethyl methylphosphonate, diethyl pentylphosphonate, dilauryl methylphosphonate, diphenyl methylphosphonate, dibenzyl methylphosphonate, diphenyl cresylphosphonate, dimethyl cresylphosphonate, dimethyl methylthionophosphonate, phenyl diphenylphosphinate, benzyl diphenylphosphinate, methyl diphenylphosphinate, trimethyl phosphine oxide, triphenyl phosphine oxide, tribenzyl phosphine oxide, 4-methyl diphenyl phosphine oxide, triethyl phosphite, tributyl phosphite, trilauryl phosphite, triphenyl phosphite, tribenzyl phosphite, phenyl diethyl phosphite, phenyl dimethyl phosphite, benzyl dimethyl phosphite, dimethyl methylphosphonite, diethyl pentylphosphonite, diphenyl methylphosphonite, dibenzyl methylphosphonite, dimethyl cresylphosphonite, methyl dimethylphosphinite, methyl diethylphosphinite, phenyl diphenylphosphinite, methyl diphenylphosphinite, benzyl diphenylphosphinite, triphenyl phosphine, tribenzyl phosphine, and methyl diphenyl phosphine. In one embodiment, triphenyl phosphine oxide is excluded as a thermal stabilizer in the process(es) of making the polyesters useful in the present disclosure and in the polyester composition(s) useful in the present disclosure.

[1823] In one embodiment, thermal stabilizers can be any of the previously described phosphorus-based acids wherein one or more of the hydrogen atoms of the acid compound (bonded to either oxygen or phosphorus atoms) are replaced

with alkyl, branched alkyl, substituted alkyl, alkyl ethers, substituted alkyl ethers, alkyl-aryl, alkyl-substituted aryl, aryl, substituted aryl, and mixtures thereof. In another embodiment, thermal stabilizers, include but are not limited to, the above described compounds wherein at least one of the hydrogen atoms bonded to an oxygen atom of the compound is replaced with a metallic ion or an ammonium ion.

[1824] The esters can contain alkyl, branched alkyl, substituted alkyl, alkyl ethers, aryl, and/or substituted aryl groups. The esters can also have at least one alkyl group and at least one aryl group. The number of ester groups present in the particular phosphorus compound can vary from zero up to the maximum allowable based on the number of hydroxyl groups present on the phosphorus compound used. For example, an alkyl phosphate ester can include one or more of the mono-, di-, and tri alkyl phosphate esters; an aryl phosphate ester includes one or more of the mono-, di-, and tri aryl phosphate esters; and an alkyl phosphate ester and/or an aryl phosphate ester also include, but are not limited to, mixed alkyl aryl phosphate esters having at least one alkyl and one aryl group.

[1825] In one embodiment, the thermal stabilizers include but are not limited to alkyl, aryl or mixed alkyl aryl esters or partial esters of phosphoric acid, phosphorus acid, phosphinic acid, phosphonic acid, or phosphonous acid. The alkyl or aryl groups can contain one or more substituents.

[1826] In one aspect, the phosphorus compounds comprise at least one thermal stabilizer chosen from at least one of substituted or unsubstituted alkyl phosphate esters, substituted or unsubstituted aryl phosphate esters, substituted or unsubstituted mixed alkyl aryl phosphate esters, diphosphites, salts of phosphoric acid, phosphine oxides, and mixed aryl alkyl phosphites, reaction products thereof, and mixtures thereof. The phosphate esters include esters in which the phosphoric acid is fully esterified or only partially esterified.

[1827] In one embodiment, for example, the thermal stabilizers can include at least one phosphate ester.

[1828] In one aspect, the phosphorus compounds useful in the present disclosure comprise at least one thermal stabilizer chosen from at least one of substituted or unsubstituted alkyl phosphate esters, substituted or unsubstituted aryl phosphate esters, mixed substituted or unsubstituted alkyl aryl phosphate esters, reaction products thereof, and mixtures thereof. The phosphate esters include esters in which the phosphoric acid is fully esterified or only partially esterified.

[1829] In one embodiment, for example, the thermal stabilizers useful in the present disclosure can include at least one phosphate ester.

[1830] In another embodiment, the phosphate esters useful in the present disclosure can include but are not limited to alkyl phosphate esters, aryl phosphate esters, mixed alkyl aryl phosphate esters, and/or mixtures thereof.

[1831] In certain embodiments, the phosphate esters useful in the present disclosure are those where the groups on the phosphate ester include are alkyl, alkoxy-alkyl, phenyl, or substituted phenyl groups. These phosphate esters are generally referred to herein as alkyl and/or aryl phosphate esters. Certain preferred embodiments include trialkyl phosphates, triaryl phosphates, alkyl diaryl phosphates, dialkyl aryl phosphates, and mixtures of such phosphates, wherein the alkyl groups are preferably those containing from 2 to 12 carbon atoms, and the aryl groups are preferably phenyl.

[1832] Representative alkyl and branched alkyl groups are preferably those containing from 1-12 carbon atoms, including, but not limited to, ethyl, propyl, isopropyl, butyl, hexyl,

cyclohexyl, 2-ethylhexyl, octyl, decyl and dodecyl. Substituted alkyl groups include, but are not limited to, those containing at least one of carboxylic acid groups and esters thereof, hydroxyl groups, amino groups, keto groups, and the like.

[1833] Representative of alkyl-aryl and substituted alkyl-aryl groups are those wherein the alkyl portion contains from 1-12 carbon atoms, and the aryl group is phenyl or substituted phenyl wherein groups such as alkyl, branched alkyl, aryl, hydroxyl, and the like are substituted for hydrogen at any carbon position on the phenyl ring. Preferred aryl groups include phenyl or substituted phenyl wherein groups such as alkyl, branched alkyl, aryl, hydroxyl and the like are substituted for hydrogen at any position on the phenyl ring.

[1834] In one embodiment, the phosphate esters useful as thermal stabilizers in the present disclosure include but are not limited to dibutylphenyl phosphate, triphenyl phosphate, tricresyl phosphate, tributyl phosphate, tri-2-ethylhexyl phosphate, trioctyl phosphate, and/or mixtures thereof, including particularly mixtures of tributyl phosphate and tricresyl phosphate, and mixtures of isocetyl diphenyl phosphate and 2-ethylhexyl diphenyl phosphate.

[1835] In one embodiment, the phosphate esters useful as thermal stabilizers in the present disclosure include but are not limited to, at least one of the following: trialkyl phosphates, triaryl phosphates, alkyl diaryl phosphates, and mixed alkyl aryl phosphates.

[1836] In one embodiment, the phosphate esters useful as thermal stabilizers in the present disclosure include but are not limited to, at least one of the following: triaryl phosphates, alkyl diaryl phosphates, and mixed alkyl aryl phosphates.

[1837] In one embodiment, the phosphate esters useful as thermal stabilizers in the present disclosure include but are not limited to, at least one of the following: triaryl phosphates and mixed alkyl aryl phosphates.

[1838] In one embodiment, at least one thermal stabilizer useful in the present disclosure comprises, but is not limited to, triaryl phosphates, such as, for example, triphenyl phosphate. In one embodiment, at least one thermal stabilizer comprises, but is not limited to Merpol A. In one embodiment, at least one thermal stabilizer useful in the present disclosure comprises, but is not limited to, at least one of triphenyl phosphate and Merpol A. Merpol A is a phosphate ester commercially available from Stepan Chemical Co and/or E.I. duPont de Nemours & Co. The CAS Registry number for Merpol A is believed to be CAS Registry #37208-27-8.

[1839] In one embodiment, the polyester compositions and/or processes of the present disclosure may comprise 2-ethylhexyl diphenyl phosphate.

[1840] In one embodiment, the polyester compositions and/or processes of the present disclosure may comprise 2-ethylhexyl diphenyl phosphate.

[1841] In one embodiment, the phosphorus compounds useful in the present disclosure comprise, but are not limited to, at least one diphosphite.

[1842] In one embodiment, the phosphorus compounds useful in the present disclosure comprise, but are not limited to, at least one diphosphite which contains a 2,4,8,10-tetraoxa-3,9-diphosphaspiro[5.5]undecane structure, such as, for example, Weston 619 (GE Specialty Chemicals, CAS#3806-34-6) and/or Doverphos S-9228 (Dover Chemicals, CAS#154862-43-8).

[1843] In one embodiment, the phosphorus compounds useful in the present disclosure comprise at least one phosphine oxide, such as, for example, triphenylphosphine oxide.

[1844] In one embodiment, the phosphorus compounds useful in the present disclosure comprise at least one mixed alkyl aryl phosphites, such as, for example, bis(2,4-dicumylphenyl)pentaerythritol diphosphite also known as Doverphos S-9228 (Dover Chemicals, CAS#154862-43-8).

[1845] In one embodiment, any of processes described herein for making the polyester compositions and/or polyesters comprise at least one of the phosphorus compounds described herein.

[1846] In one embodiment, any of processes described herein for making any of the polyester compositions and/or polyesters can comprise at least one diphosphite.

[1847] In one embodiment, any of the processes described herein for making any of the polyester compositions and/or polyesters can comprise, at least one diphosphite which contains a 2,4,8,10-tetraoxa-3,9-diphosphaspiro[5.5]undecane structure, such as, for example, Weston 619 (GE Specialty Chemicals, CAS#3806-34-6) and/or Doverphos S-9228 (Dover Chemicals, CAS#154862-43-8).

[1848] In one embodiment, any of the processes described herein for making any of the polyester compositions and/or polyesters can comprise at least one phosphine oxide, such as, for example, triphenylphosphine oxide.

[1849] In one embodiment, any of the processes described herein for making any of the polyester compositions and/or polyesters can comprise at least one mixed alkyl aryl phosphites, such as, for example, bis(2,4-dicumylphenyl)pentaerythritol diphosphite also known as Doverphos S-9228 (Dover Chemicals, CAS#154862-43-8).

[1850] When phosphorus is added to the polyesters and/or polyester compositions and/or process of making the polyesters of the present disclosure, it is added in the form of a phosphorus compound as described herein, for example, at least one phosphate ester, at least one diphosphite, at least one salt of phosphoric acid. The amount of phosphorus compound (s), (for example, at least one diphosphite), is added to the polyesters of the present disclosure and/or polyester compositions of the present disclosure and/or processes of the present disclosure can be measured in the form of phosphorus atoms present in the final polyester, for example, by weight measured in ppm.

[1851] Amounts of thermal stabilizer added during polymerization or post manufacturing can include but are not limited to: 1 to 5000 ppm; 1 to 1000 ppm, 1 to 900 ppm, 1 to 800 ppm, 1 to 700 ppm, 1 to 600 ppm, 1 to 500 ppm, 1 to 400 ppm, 1 to 350 ppm, 1 to 300 ppm, 1 to 250 ppm, 1 to 200 ppm, 1 to 150 ppm, 1 to 100 ppm; 10 to 5000 ppm; 10 to 1000 ppm, 10 to 900 ppm, 10 to 800 ppm, 10 to 700 ppm, 10 to 600 ppm, 10 to 500 ppm, 10 to 400 ppm, 10 to 350 ppm, 10 to 300 ppm, 10 to 250 ppm, 10 to 200 ppm, 10 to 150 ppm, 10 to 100 ppm; based on the total weight of the polyester composition.

[1852] In one embodiment, amounts of the phosphorus compound (for example, diphosphite, phosphate ester, etc.) of the present disclosure added during polymerization are chosen from the following: 1 to 5000 ppm; 1 to 1000 ppm, 1 to 900 ppm, 1 to 800 ppm, 1 to 700 ppm, 1 to 600 ppm, 1 to 500 ppm, 1 to 400 ppm, 1 to 350 ppm, 1 to 300 ppm, 1 to 250 ppm, 1 to 200 ppm, 1 to 150 ppm, 1 to 100 ppm; 1 to 60 ppm; 2 to 5000 ppm; 2 to 1000 ppm, 2 to 900 ppm, 2 to 800 ppm, 2 to 700 ppm, 2 to 600 ppm, 2 to 500 ppm, 2 to 400 ppm, 2 to 350 ppm, 2 to 300 ppm, 2 to 250 ppm, 2 to 200 ppm, 2 to 150

ppm, 2 to 100 ppm; 2 to 60 ppm; 2 to 20 ppm, 3 to 5000 ppm; 3 to 1000 ppm, 3 to 900 ppm, 3 to 800 ppm, 3 to 700 ppm, 3 to 600 ppm, 3 to 500 ppm, 3 to 400 ppm, 3 to 350 ppm, 3 to 300 ppm, 3 to 250 ppm, 3 to 200 ppm, 3 to 150 ppm, 3 to 100 ppm; 3 to 60 ppm; 3 to 20 ppm, 4 to 5000 ppm; 4 to 1000 ppm, 4 to 900 ppm, 4 to 800 ppm, 4 to 700 ppm, 4 to 600 ppm, 4 to 500 ppm, 4 to 400 ppm, 4 to 350 ppm, 4 to 300 ppm, 4 to 250 ppm, 4 to 200 ppm, 4 to 150 ppm, 4 to 100 ppm; 4 to 60 ppm; 4 to 20 ppm, 5 to 5000 ppm; 5 to 1000 ppm, 5 to 900 ppm, 5 to 800 ppm, 5 to 700 ppm, 5 to 600 ppm, 5 to 500 ppm, 5 to 400 ppm, 5 to 350 ppm, 5 to 300 ppm, 5 to 250 ppm, 5 to 200 ppm, 5 to 150 ppm, 5 to 100 ppm; 5 to 60 ppm; 5 to 20 ppm, 6 to 5000 ppm; 6 to 1000 ppm, 6 to 900 ppm, 6 to 800 ppm, 6 to 700 ppm, 6 to 600 ppm, 6 to 500 ppm, 6 to 400 ppm, 6 to 350 ppm, 6 to 300 ppm, 6 to 250 ppm, 6 to 200 ppm, 6 to 150 ppm, 6 to 100 ppm; 6 to 60 ppm; 6 to 20 ppm, 7 to 5000 ppm; 7 to 1000 ppm, 7 to 900 ppm, 7 to 800 ppm, 7 to 700 ppm, 7 to 600 ppm, 7 to 500 ppm, 7 to 400 ppm, 7 to 350 ppm, 7 to 300 ppm, 7 to 250 ppm, 7 to 200 ppm, 7 to 150 ppm, 7 to 100 ppm; 7 to 60 ppm; 7 to 20 ppm, 8 to 5000 ppm; 8 to 1000 ppm, 8 to 900 ppm, 8 to 800 ppm, 8 to 700 ppm, 8 to 600 ppm, 8 to 500 ppm, 8 to 400 ppm, 8 to 350 ppm, 8 to 300 ppm, 8 to 250 ppm, 8 to 200 ppm, 8 to 150 ppm, 8 to 100 ppm; 8 to 60 ppm; 8 to 20 ppm, 9 to 5000 ppm; 9 to 1000 ppm, 9 to 900 ppm, 9 to 800 ppm, 9 to 700 ppm, 9 to 600 ppm, 9 to 500 ppm, 9 to 400 ppm, 9 to 350 ppm, 9 to 300 ppm, 9 to 250 ppm, 9 to 200 ppm, 9 to 150 ppm, 9 to 100 ppm; 9 to 60 ppm; 9 to 20 ppm, 10 to 5000 ppm; 10 to 1000 ppm, 10 to 900 ppm, 10 to 800 ppm, 10 to 700 ppm, 10 to 600 ppm, 10 to 500 ppm, 10 to 400 ppm, 10 to 350 ppm, 10 to 300 ppm, 10 to 250 ppm, 10 to 200 ppm, 10 to 150 ppm, 10 to 100 ppm, 10 to 60 ppm, 10 to 20 ppm, 50 to 5000 ppm, 50 to 1000 ppm, 50 to 900 ppm, 50 to 800 ppm, 50 to 700 ppm, 50 to 600 ppm, 50 to 500 ppm, 50 to 400 ppm, 50 to 350 ppm, 50 to 300 ppm, 50 to 250 ppm, 50 to 200 ppm, 50 to 150 ppm, 50 to 100 ppm; 50 to 80 ppm, 100 to 5000 ppm, 100 to 1000 ppm, 100 to 900 ppm, 100 to 800 ppm, 100 to 700 ppm, 100 to 600 ppm, 100 to 500 ppm, 100 to 400 ppm, 100 to 350 ppm, 100 to 300 ppm, 100 to 250 ppm, 100 to 200 ppm, 100 to 150 ppm; 150 to 5000 ppm, 150 to 1000 ppm, 150 to 900 ppm, 150 to 800 ppm, 150 to 700 ppm, 150 to 600 ppm, 150 to 500 ppm, 150 to 400 ppm, 150 to 350 ppm, 150 to 300 ppm, 150 to 250 ppm, 150 to 200 ppm, 200 to 5000 ppm, 200 to 1000 ppm, 200 to 900 ppm, 200 to 800 ppm, 200 to 700 ppm, 200 to 600 ppm, 200 to 500 ppm, 200 to 400 ppm, 200 to 350 ppm, 200 to 300 ppm, 200 to 250 ppm, 250 to 5000 ppm, 250 to 1000 ppm, 250 to 900 ppm, 250 to 800 ppm, 250 to 700 ppm, 250 to 600 ppm, 250 to 500 ppm, 250 to 400 ppm, 250 to 350 ppm, 250 to 300 ppm, 500 to 5000 ppm, 300 to 1000 ppm, 300 to 900 ppm, 300 to 800 ppm, 300 to 700 ppm, 300 to 600 ppm, 300 to 500 ppm, 300 to 400 ppm, 300 to 350 ppm, 350 to 5000 ppm, 350 to 1000 ppm, 350 to 900 ppm, 350 to 800 ppm, 350 to 700 ppm, 350 to 600 ppm, 350 to 500 ppm, 350 to 400 ppm; based on the total weight of the polyester composition and as measured in the form of phosphorus atoms in the final polyester.

[1853] The polyesters of the aromatic-aliphatic polyesters or the aliphatic polyesters of the present disclosure can also comprise at least one chain extender. Suitable chain extenders include, but are not limited to, multifunctional (including, but not limited to, bifunctional) isocyanates, multifunctional epoxides, including for example, epoxylated novolacs, and phenoxy resins. In certain embodiments, chain extenders may be added at the end of the polymerization process or after the polymerization process. If added after the polymerization

process, chain extenders can be incorporated by compounding or by addition during conversion processes such as injection molding or extrusion. The amount of chain extender used can vary depending on the specific monomer composition used and the physical properties desired but is generally about 0.1 percent by weight to about 10 percent by weight, preferably about 0.1 to about 5 percent by weight, based on the total weight of the polyester.

[1854] In one embodiment, certain aromatic-aliphatic polyesters and/or aliphatic polyesters useful in this present disclosure are visually clear. The term “visually clear” is defined herein as an appreciable absence of cloudiness, haziness, and/or muddiness, when inspected visually. When the polyesters are blended with polycarbonate, including bisphenol A polycarbonates, the blends can be visually clear in one aspect of the present disclosure. In other embodiments, the aromatic-aliphatic polyesters and/or aliphatic polyesters useful in the present disclosure may have a yellowness index (ASTM D-1925) of less than 50, such as less than 20.

II. Polycarbonates

[1855] Polycarbonates useful in the present disclosure include the polycarbonate of 4,4'-isopropylidenediphenol (bisphenol A). The polycarbonate portion of the blend is prepared in the melt, in solution, or by interfacial polymerization techniques well known in the art. Such known techniques include reacting a dihydroxyaromatic compound with a carbonate precursor such as phosgene, a haloformate or a carbonate ester, a molecular weight regulator, an acid acceptor and a catalyst. For example, polycarbonates useful in the present disclosure can be made by reacting bisphenol A with phosgene, dibutyl carbonate, diphenyl carbonate, etc. Methods for preparing polycarbonates are known in the art and are described, for example, in U.S. Pat. No. 4,452,933, where the disclosure regarding the preparation of polycarbonates is hereby incorporated by reference herein.

[1856] In one embodiment, the polycarbonate useful in the blends of the present disclosure does not contain dihydroxydiphenyl cycloalkanes. In another embodiment, the polycarbonate useful in the blends of the present disclosure does not contain dihydroxydiphenyl cycloalkanes such as those used in U.S. Pat. No. 6,043,322.

[1857] Examples of suitable carbonate precursors include, but are not limited to, carbonyl bromide, carbonyl chloride, or mixtures thereof; diphenyl carbonate; a di(halophenyl)carbonate, e.g., di(trichlorophenyl)carbonate, di(tribromophenyl)carbonate, and the like; di(alkylphenyl)carbonate, e.g., di(tolyl)carbonate; di(naphthyl)carbonate; di(chloronaphthyl)carbonate, or mixtures thereof; and bis-haloformates of dihydric phenols.

[1858] Examples of suitable molecular weight regulators include, but are not limited to, phenol, cyclohexanol, methanol, alkylated phenols, such as octylphenol, para-tertiary-butyl-phenol, and the like. In one embodiment, the molecular weight regulator is phenol or an alkylated phenol.

[1859] The acid acceptor may be either an organic or an inorganic acid acceptor. A suitable organic acid acceptor can be a tertiary amine and includes, but is not limited to, such materials as pyridine, triethylamine, dimethylaniline, tributylamine, and the like. The inorganic acid acceptor can be either a hydroxide, a carbonate, a bicarbonate, or a phosphate of an alkali or alkaline earth metal.

[1860] The catalysts that can be used include, but are not limited to, those that typically aid the polymerization of the

monomer with phosgene. Suitable catalysts include, but are not limited to, tertiary amines such as triethylamine, tripropylamine, N,N-dimethylaniline, quaternary ammonium compounds such as, for example, tetraethylammonium bromide, cetyl triethyl ammonium bromide, tetra-n-heptylammonium iodide, tetra-n-propyl ammonium bromide, tetramethyl ammonium chloride, tetra-methyl ammonium hydroxide, tetra-n-butyl ammonium iodide, benzyltrimethyl ammonium chloride and quaternary phosphonium compounds such as, for example, n-butyltriphenyl phosphonium bromide and methyltriphenyl phosphonium bromide.

[1861] For certain embodiments of the present disclosure, the polycarbonates useful in the polymer blends disclosed herein may exhibit at least one of the following inherent viscosities as determined in 60/40 (wt/wt) phenol/tetrachloroethane at a concentration of 0.5 g/100 ml at 25° C.: 0.20 to 1.0 dL/g; 0.20 to 0.75 dL/g; 0.30 dL/g to 1.0 dL/g; 0.30 to 0.75 dL/g; 0.50 to 1.0 gL/g; 0.50 to 0.75 dL/g; greater than 0.30 dL/g; greater than 0.40 dL/g; or greater than 0.50 dL/g.

[1862] The polyesters and/or the polycarbonates useful in the compositions of the present disclosure can comprise from 0 to 10 mole percent, for example, from 0.01 to 5 mole percent, from 0.01 to 1 mole percent, from 0.05 to 5 mole percent, from 0.05 to 1 mole percent, or from 0.1 to 0.7 mole percent, based the total mole percentages of either the diol or diacid residues; respectively, of one or more residues of a branching monomer, also referred to herein as a branching agent, having 3 or more carboxyl substituents, hydroxyl substituents, or a combination thereof. In certain embodiments, the branching monomer or agent may be added prior to and/or during and/or after the polymerization of the polyester. The polyester(s) useful in the present disclosure can thus be linear or branched. The polycarbonate can also be linear or branched. In certain embodiments, the branching monomer or agent may be added prior to and/or during and/or after the polymerization of the polycarbonate.

[1863] Examples of branching monomers include, but are not limited to, multifunctional acids or multifunctional alcohols such as trimellitic acid, trimellitic anhydride, pyromellitic dianhydride, trimethylolpropane, glycerol, pentaerythritol, citric acid, tartaric acid, 3-hydroxyglutaric acid and the like. In one embodiment, the branching monomer residues can comprise 0.1 to 0.7 mole percent of one or more residues chosen from at least one of the following: trimellitic anhydride, pyromellitic dianhydride, glycerol, sorbitol, 1,2,6-hexanetriol, pentaerythritol, trimethylolpropane, and/or trimesic acid. The branching monomer may be added to the polyester reaction mixture or blended with the polyester in the form of a concentrate as described, for example, in U.S. Pat. Nos. 5,654,347 and 5,696,176, whose disclosure regarding branching monomers is incorporated herein by reference.

[1864] In addition, the polyesters and/or the polycarbonates of the polymer blends useful in the present disclosure may also contain from 0.01 to 25% by weight of the overall polymer blend composition common additives such as colorants and/or dyes (if color is desired in the final blend), mold release agents, flame retardants, plasticizers, nucleating agents, stabilizers, including but not limited to, UV stabilizers, thermal stabilizers and/or reaction products thereof, fillers, and impact modifiers. Examples of typical commercially available impact modifiers well known in the art and useful in this present disclosure include, but are not limited to, ethylene/propylene terpolymers; functionalized polyolefins, such as those containing methyl acrylate and/or glycidyl meth-

acrylate; styrene-based block copolymeric impact modifiers, and various acrylic core/shell type impact modifiers. Residues of such additives are also contemplated as part of the polymer blend.

[1865] The polymer blend compositions of the present disclosure can be made by conventional mixing methods known in the art, such as melt blending or solution blending. Suitable methods include, but are not limited to, the steps of mixing the aliphatic-aromatic polyester, the aliphatic polyester, and the polycarbonate in powder or granular form in an extruder, extruding the mixture into strands, chopping the strands into pellets, and molding the pellets into the desired article(s). See U.S. Pat. No. 3,772,405 for methods of producing polyesters, the disclosure regarding such methods is hereby incorporated herein by reference. Examples of suitable molecular weight regulators include, but are not limited to, phenol, cyclohexanol, methanol, alkylated phenols, such as octylphenol, para-tertiary-butyl-phenol, and the like. In one embodiment, the molecular weight regulator is phenol or an alkylated phenol.

[1866] Reinforcing materials may be useful in the blends of the present disclosure. The reinforcing materials may include, but are not limited to, carbon filaments, silicates, mica, clay, talc, titanium dioxide, Wollastonite, glass flakes, glass beads and fibers, and polymeric fibers and combinations thereof. In one embodiment, the reinforcing materials are glass, such as, fibrous glass filaments, mixtures of glass and talc, glass and mica, and glass and polymeric fibers.

EXAMPLES

[1867] The following examples further illustrate how the polymer blends of the present disclosure can be made and evaluated, and are intended to be purely exemplary of the present disclosure and are not intended to limit the scope thereof. Unless indicated otherwise, parts are parts by weight, temperature is in degrees Celsius or is at room temperature, and pressure is at or near atmospheric. For the purposes of this disclosure, the term "wt" means "weight".

Measurement Methods

[1868] The inherent viscosity of the polyesters was determined in 60/40 (wt/wt) phenol/tetrachloroethane at a concentration of 0.5 g/100 ml at 25° C.

[1869] The glass transition temperature (T_g) was determined using a Perkin Elmer DSC instrument at a scan rate of 20° C./min.

[1870] The composition of the neat resins was determined by proton nuclear magnetic resonance (NMR) spectroscopy. All NMR spectra were recorded on a JEOL Eclipse Plus 600 MHz nuclear magnetic resonance spectrometer using either chloroform-trifluoroacetic acid (70-30 volume/volume) for polymers or, for oligomeric samples, 60/40 (wt/wt) phenol/tetrachloroethane with deuterated chloroform added for lock. Peak assignments for 2,2,4,4-tetramethyl-1,3-cyclobutanediol resonances were made by comparison to model mono- and dibenzoate esters of 2,2,4,4-tetramethyl-1,3-cyclobutanediol. These model compounds closely approximate the resonance positions found in the polymers and oligomers. The miscibility of the compositions herein was determined by the clarity of molded bars.

[1871] The heat deflection temperature was determined at 264 psi according to ASTM D648. Flexural modulus and

flexural strength were determined according to ASTM D790. Tensile properties were determined according to ASTM D638.

[1872] The polycarbonate used in all of the examples was Makrolon™ 2608 (Bayer Material Science, Inc.) with a measured inherent viscosity of 0.522 dL/g.

[1873] Unless otherwise specified, polymer blends were prepared in a 19 mm Leistritz twin screw extruder. The polyesters and polycarbonate were premixed by tumble blending and fed into the extruder. The extruded strand was pelletized, and the pellets were injection molded into parts on a Toyo 90 injection molding machine. The extruder was run at 350 rpms at a feed rate to give a machine torque between 80-100%.

Example 1

[1874] The aliphatic-aromatic polyester was made from terephthalic acid, 46.6 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol (54.1 mole % cis isomer), and 53.7 mole % of cyclohexanedimethanol. The inherent viscosity was measured to be 0.59 dL/g. The aliphatic polyester was made from 1,4-cyclohexanedimethanol and 1,4-cyclohexane dicarboxylic acid and had a measured inherent viscosity of 1.08 dL/g. The aliphatic-aromatic polyester was dried at 90° C., the aliphatic polyester was dried at 70° C., and the polycarbonate was dried at 120° C. Processing temperatures used were in the range of 270-290° C. The compositions and properties of the blends are shown in Table 1.

Samples C, D, and E demonstrate how clear blends may be obtained by the addition of greater than 3% PCCD polyester. Samples A and B illustrate hazy blends as comparative examples outside the scope of the present disclosure.

TABLE 1

	UNITS	A	B	C	D	E	F
% Aliphatic-aromatic polyester	%	50	47.5	45	42.5	40	50
% Polycarbonate	%	50	50	50	50	50	0
% Aliphatic polyester	%	0	2.5	5.0	7.5	10	50
Heat Deflection Temperature 264 Psi	(deg C.)	113	111	108	106	105	72
Tensile Strength	MPa	56	56	55	55	55	42
Tensile Break Elongation	%	103	109	102	112	97	185
Flexural Modulus	MPa	1952	1954	1954	1928	1914	1359
Flexural Strength	MPa	84	84	84	85	85	58
Visual Clarity		HAZY	HAZY	CLEAR	CLEAR	CLEAR	CLEAR

Example 2

[1875] The aliphatic-aromatic polyester was made from terephthalic acid, 95.7 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol, and 4.3 mole % of ethylene glycol. The inherent viscosity of the aliphatic-aromatic polyester was 0.457 dL/g. The aliphatic polyester was made from 1,4-cyclohexanedimethanol (30.4 mole % cis isomer) and 1,4-cyclohexane dicarboxylic acid (7.2 mole % cis isomer), and had a measured inherent viscosity of 1.08 dL/g. The aliphatic-aromatic polyester was dried at 120° C., the aliphatic polyester was dried at 70° C., and the polycarbonate was dried at 120° C. Processing temperatures used were in the range of 290-310° C. The compositions and properties of the blends are shown in Table 2.

[1876] Samples B and C demonstrate how clear blends may be obtained by the addition of greater than 3% PCCD polyester. The hazy blend of sample A serves as a comparative example.

TABLE 2

	UNITS	A	B	C
% Aliphatic-aromatic polyester	%	50	45	42.5
% Polycarbonate	%	50	45	42.5
% Aliphatic polyester	%		10	15
Heat Deflection Temperature	(deg C.)	127	119	116
264 Psi				
Tensile Strength	MPa	61	61	59
Tensile Break Elongation	%	10	10	12
Flexural Modulus	MPa	2106	2069	2024
Flexural Strength	MPa	92	91	91
Visual Clarity		HAZY	CLEAR	CLEAR

[1877] It can be clearly seen from a comparison of the data in the above relevant working examples that the polymer blends of the present disclosure offer a definite advantage over other polymer blends with regard to clarity, heat resistance, and toughness.

[1878] The present disclosure has been described in detail with reference to the embodiments disclosed herein, but it will be understood that variations and modifications can be effected within the spirit and scope of the present disclosure.

We claim:

1. A composition comprising:

(I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:

(a) a dicarboxylic acid component comprising:

(i) 80 to 100 mole % of terephthalic acid residues;

(ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and

(iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;

wherein the total mole % of the dicarboxylic acid component is 100 mole %; and

(b) a glycol component comprising:

(i) 5 to 100 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues, ethylene glycol residues, or a mixture thereof; and

(ii) 0 to 95 mole % of 1,4-cyclohexanedimethanol residues;

wherein the total mole % of the glycol component is 100 mole %;

(II) 3 to 80 weight % of at least one aliphatic polyester comprising:

(a) a dicarboxylic acid component comprising:

(i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and

- (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
 - (b) a glycol component comprising 1,4 cyclohexanedimethanol residues;
wherein the total mole % of the glycol component is 100 mole %; and
 - (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.
2. The composition according to claim 1, wherein the dicarboxylic acid component of the aromatic-aliphatic polyester comprises 90 to 100 mole % of terephthalic acid residues.
3. The composition according to claim 1, wherein the glycol component of the aromatic-aliphatic polyester comprises:
- (i) 25 to 100 mole % of 2,2,4,4-tetramethyl-1,3 cyclobutanediol residues, ethylene glycol residues, or a mixture thereof; and
 - (ii) 0 to 75 mole % of 1,4-cyclohexanedimethanol residues;
wherein the total mole % of said glycol component is 100 mole %.
4. The composition according to claim 1, wherein the glycol component of the aromatic-aliphatic polyester comprises:
- (i) 50 to 100 mole % of 2,2,4,4-tetramethyl-1,3 cyclobutanediol residues, ethylene glycol residues, or a mixture thereof; and
 - (ii) 0 to 50 mole % of 1,4-cyclohexanedimethanol residues;
wherein the total mole % of said glycol component is 100 mole %.
5. The composition according to claim 1, wherein the glycol component of the aromatic-aliphatic polyester further comprises up to 10 mole % of another glycol containing 2 to 16 carbon atoms, wherein the total mole % of said glycol component is 100 mole %.
6. The composition according to claim 1, wherein the composition is visually clear.
7. The composition according to claim 1, wherein the inherent viscosity of the aromatic-aliphatic polyester ranges from 0.3 to 0.75 dL/g.
8. The composition according to claim 1, wherein the inherent viscosity of the aromatic-aliphatic polyester ranges from 0.45 to 0.65 dL/g.
9. The composition according to claim 1, wherein the at least one aliphatic polyester comprises 3 to 50 weight % based on the total weight % of the composition.
10. The composition according to claim 1, wherein the at least one aliphatic polyester comprises 3 to 30 weight % based on the total weight % of the composition.
11. The composition according to claim 1, wherein the at least one aliphatic polyester comprises 3 to 10 weight % based on the total weight % of the composition.
12. The composition according to claim 1, wherein the glycol component of the aliphatic polyester further comprises up to 10 mole % of another glycol containing 2 to 16 carbon atoms, wherein the total mole % of said glycol component is 100 mole %.
13. The composition according to claim 1, wherein the inherent viscosity of the aliphatic polyester ranges from 0.7 to 1.2 dL/g.
14. The composition according to claim 1, wherein the inherent viscosity of the aliphatic polyester ranges from 0.9 to 1.1 dL/g.
15. The composition according to claim 1, wherein the polycarbonate further comprises at least one of modifying glycols and aromatic diols.
16. The composition according to claim 1, wherein the inherent viscosity of the polycarbonate is greater than 0.3 dL/g.
17. The composition according to claim 1, wherein the inherent viscosity of the polycarbonate is greater than 0.5 dL/g.
18. The composition according to claim 1, further comprising at least one additive chosen from colorants, dyes, mold release agents, flame retardants, plasticizers, nucleating agents, reinforcing agents, UV stabilizers, thermal stabilizers and/or reaction products thereof, fillers, and impact modifiers.
19. An article of manufacture comprising the composition according to claim 1.
20. The article of manufacture according to claim 19, wherein the item of manufacture is chosen from films, sheets, fibers, and molded articles.
21. A composition comprising:
- (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:
 - (a) a dicarboxylic acid component comprising:
 - (i) 80 to 100 mole % of terephthalic acid residues;
 - (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and
 - (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
 wherein the total mole % of the dicarboxylic acid component is 100 mole %;
 - (b) a glycol component comprising:
 - (i) 5 to 100 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and
 - (ii) 0 to 95 mole % of 1,4-cyclohexanedimethanol residues;
 wherein the total mole % of the glycol component is 100 mole %; and
 - (II) 3 to 80 weight % of at least one aliphatic polyester comprising:
 - (a) a dicarboxylic acid component comprising:
 - (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and
 - (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
 wherein the total mole % of the dicarboxylic acid component is 100 mole %; and
 - (b) a glycol component comprising 1,4 cyclohexanedimethanol residues;
wherein the total mole % of the glycol component is 100 mole %; and
 - (III) 10 to 80 weight % of at least one polycarbonate comprising 4,4'-isopropylidenediphenol residues.
22. A composition comprising:
- (I) 10 to 80 weight % of at least one aromatic-aliphatic polyester comprising:
 - (a) a dicarboxylic acid component comprising:
 - (i) 80 to 100 mole % of terephthalic acid residues;
 - (ii) 0 to 20 mole % of aromatic dicarboxylic acid residues; and
 - (iii) 0 to 10 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
 wherein the total mole % of the dicarboxylic acid component is 100 mole %; and

- (b) a glycol component comprising:
- (i) 50 to 100 mole % of 2,2,4,4-tetramethyl-1,3-cyclobutanediol residues; and
 - (ii) 0 to 50 mole % of 1,4-cyclohexanedimethanol residues;
- wherein the total mole % of the glycol component is 100 mole %; and
- (II) 3 to 15 weight % of at least one aliphatic polyester comprising:
- (a) a dicarboxylic acid component comprising:
 - (i) 80 to 100 mole % of 1,4 cyclohexane dicarboxylic acid residues; and
 - (ii) 0 to 20 mole % of aliphatic dicarboxylic acid residues having 6 to 12 carbon atoms;
 - wherein the total mole % of the dicarboxylic acid component is 100 mole %;
 - (b) a glycol component comprising 1,4-cyclohexanedimethanol residues;
 - wherein the total mole % of the glycol component is 100 mole %; and
- (III) 10 to 80 weight % of at least one polycarbonate of 4,4'-isopropylidenediphenol.
- * * * * *