solubility, and thus, industrial application thereof was limited.

Disclosure of Invention

Aspects of the invention are defined in the independent claims. Some optional features of the invention are defined in the dependent claims.

In accordance with one aspect of the present invention, there is provided a polyester resin comprising a repeating unit obtained by copolymerizing:

(a) a divalent acid component; and

(b) a diol component comprising isosorbide and a cycloaliphatic diol, wherein the diol component further comprises at least one compound in an amount of 19 to 80 mol% on the basis of the total number of moles of the diol component, wherein the at least one compound comprises neopentyl glycol, and

wherein the polyester resin has a glass transition temperature of 80°C or higher, and the molar ratio of the sum of the isosorbide and the cycloaliphatic diol and the neopentyl glycol in the diol component in the polyester resin is 0.5 to 2.5 : 1, optionally wherein the at least one compound further comprises ethylene glycol, diethylene glycol, triethylene glycol, propanediol, 1,4-butanediol, pentanediol, hexanediol, 1,2-cyclohexanediol, 1,4-cyclohexanediol, 1,2-cyclohexanedimethanol, 1,3-cyclohexanedimethanol, 1,4-cyclohexanedimethanol, or tetramethyl cyclobutanediol.

In accordance with another aspect of the present invention, there is provided a coating composition comprising the above-described polyester resin and an organic solvent.

Advantageous Effects of Invention

According to the present invention, it may be possible to prepare a polyester resin comprising isosorbide which has high heat-resistance with a glass transition temperature

Claims:

[Claim 1]

A polyester resin comprising a repeating unit obtained by copolymerizing:

(a) a divalent acid component; and

(b) a diol component comprising isosorbide and a cycloaliphatic diol, wherein the diol component further comprises at least one compound in an amount of 19 to 80 mol% on the basis of the total number of moles of the diol component, wherein the at least one compound comprises neopentyl glycol, and

wherein the polyester resin has a glass transition temperature of 80°C or higher, and the molar ratio of the sum of the isosorbide and the cycloaliphatic diol and the neopentyl glycol in the diol component in the polyester resin is 0.5 to 2.5 : 1,

optionally wherein the at least one compound further comprises ethylene glycol, diethylene glycol, triethylene glycol, propanediol, 1,4-butanediol, pentanediol, hexanediol, 1,2-cyclohexanediol, 1,4-cyclohexanediol, 1,2-cyclohexanedimethanol, 1,3-cyclohexanedimethanol, 1,4-cyclohexanedimethanol, or tetramethyl cyclobutanediol.

[Claim 2]

The polyester resin of claim 1, wherein the diol component comprises 1 to 50 mol% of the isosorbide and 1 to 80 mol% of the cycloaliphatic diol on the basis of the total number of moles of the diol component.

[Claim 3]

The polyester resin of claim 1, wherein the cycloaliphatic diol is one or more diol derivatives of tricycloC_{7-14}alkane.

[Claim 4]

The polyester resin of claim 3, wherein the cycloaliphatic diol is a diol derivative of a compound selected from the group consisting of tricyclo[3.2.1.$0^{2,6}$]octane, tricyclo[4.2.1.$0^{2,6}$]nonane, tricyclo[5.2.1.$0^{2,6}$]decane, tricyclo[6.2.1.$0^{2,6}$]undecane, tricyclo[7.2.1.$0^{2,6}$]dodecane, tricyclo[4.2.1.$1^{2,5}$]decane, tricyclo[4.3.1.$1^{2,5}$]decane, tricyclo[4.4.1.$1^{2,5}$]decane, tricyclo[2.2.1.$0^{2,6}$]heptane, tricyclo[2.2.2.$0^{2,6}$]octane, tricyclo[3.2.2.$0^{2,6}$]nonane, tricyclo[3.3.1.$1^{3,6}$]decane, tricyclo[3.2.1.$1^{3,7}$]nonane, tricyclo[4.2.2.$2^{2,5}$]dodecane, tricyclo[4.3.2.$2^{2,5}$]tridecane, tricyclo[4.4.2.$2^{2,5}$]tetradecane, tricyclo[4.2.1.$0^{3,7}$]nonane, tricyclo[4.4.1.$1^{1,5}$]dodecane, tricyclo[6.2.1.$0^{2,7}$]undecane, tricyclo[5.2.2.$0^{2,6}$]undecane, tricyclo[6.2.2.$0^{2,7}$]dodecane, tricyclo[4.3.2.$0^{2,5}$]undecane, tricyclo[4.2.2.$0^{2,5}$]decane and tricyclo[5.5.1.$0^{3,11}$]tridecane, or a mixture thereof.

[Claim 5]

The polyester resin of claim 1, wherein the divalent acid component comprises one or more C_8-C_{14} aromatic dicarboxylic acids.

[Claim 6]

The polyester resin of claim 1, wherein the divalent acid component comprises a compound selected from the group consisting of terephthalic acid, isophthalic acid, naphthalene dicarboxylic acid, diphenyl dicarboxylic acid, a derivative thereof, and a mixture thereof.

[Claim 7]

The polyester resin of claim 6, wherein the divalent acid component comprises the terephthalic acid, the isophthalic acid, or a mixture thereof in an amount of 1 to 100 mol% on the basis of the total number of moles of the divalent acid component.

[Claim 8]

The polyester resin of claim 1, wherein the polyester resin has a number average molecular weight of 2,000 to 20,000, a hydroxyl value of 2 to 60 mgKOH/g, and an acid value of 0.1 to 20 mgKOH/g.

[Claim 9]

The polyester resin of claim 1, wherein the polyester resin has a glass transition temperature of 80 to 150°C.

[Claim 10]

A coating composition, comprising:

the polyester resin according to any one of claims 1 to 9; and

an organic solvent.

[Claim 11]

The coating composition of claim 10, wherein the organic solvent is selected from the group consisting of an aromatic hydrocarbon solvent, a glycol ester solvent, a glycol ether solvent, a ketone solvent, an alcohol solvent, and a mixture thereof.

[Claim 12]

The coating composition of claim 10, wherein the coating composition comprises 10 to 40 wt% of the polyester resin and 60 to 90 wt% of the organic solvent.

[Claim 13]

The coating composition of claim 10, wherein the coating composition further comprises a component selected from the group consisting of a cross-linking agent, a curing catalyst, an additive for slip property, a smoothening agent, a defoaming agent, a pigment, a leveling agent, and a mixture thereof.