[0012]

There is provided a sea-islands type composite fiber including: an island component that is a polymer having moisture absorbability; a ratio (T/R) of a thickness T of an outermost layer to a diameter R of the fiber in a transverse cross-section of the fiber of 0.05 to 0.25; and a moisture absorption rate difference (ΔMR) after a hot water treatment of 2.0 to 10.0%. The thickness of an outermost layer is a difference between a radius of the fiber and a radius of a circumscribed circle formed by connecting an apex of the island component disposed in an outermost circle, and represents a thickness of a sea component in the outermost layer.

[0012a]

In an aspect, there is provided a sea-islands type composite fiber comprising:

an island component that is a polymer having moisture absorbability;

a ratio (T/R) of a thickness T of an outermost layer to a diameter R of the fiber in a transverse cross-section of the fiber of 0.05 to 0.25; and

a moisture absorption rate difference (ΔMR) after a hot water treatment of 2.0 to 10.0%,

wherein

a shape of center side of the island component

disposed in an outermost circle in the transverse cross-section of the fiber is non-circular, and

the polymer having moisture absorbability is a polyetherester, the polyetherester containing an aromatic dicarboxylic acid and an aliphatic diol as main components, and containing the polyether as a copolymerization component, and

the thickness of an outermost layer is a difference between a radius of the fiber and a radius of a circumscribed circle formed by connecting apexes of the island components disposed in an outermost circle, and represents a thickness of a sea component in the outermost layer.

[0013]

The thickness T of an outermost layer is preferably 500 to 3,000 nm, and the diameter r of the island component in the transverse cross-section of the fiber is preferably 10 to 5,000 nm.

[0014]

Further, it is preferable that the island component be disposed to form 2 to 100 circles in the transverse cross-section of the fiber, a ratio (r1/r2) of a diameter r1 of the island component disposed to pass through a center of the transverse cross-section of the fiber to a

CLAIMS

1. A sea-islands type composite fiber comprising:

an island component that is a polymer having moisture absorbability;

a ratio (T/R) of a thickness T of an outermost layer to a diameter R of the fiber in a transverse cross-section of the fiber of 0.05 to 0.25; and

a moisture absorption rate difference (ΔMR) after a hot water treatment of 2.0 to 10.0%,

wherein

a shape of a center side of the island component disposed in an outermost circle in the transverse cross-section of the fiber is non-circular, and

the polymer having moisture absorbability is a polyetherester, the polyetherester containing an aromatic dicarboxylic acid and an aliphatic diol as main components, and containing the polyether as a copolymerization component, and

the thickness of an outermost layer is a difference between a radius of the fiber and a radius of a circumscribed circle formed by connecting apexes of the island components disposed in an outermost circle, and represents a thickness of a sea component in the outermost layer.

2. The sea-islands type composite fiber according to claim 1, wherein the thickness T of an outermost layer is 500 to 3,000 nm.

3. The sea-islands type composite fiber according to claim 1 or 2, wherein the island component has a diameter r of 10 to 5,000 nm in the transverse cross-section of the fiber.

4. The sea-islands type composite fiber according to any one of claims 1 to 3, wherein the island component is disposed to from 2 to 100 circles in the transverse cross-section of the fiber.

5. The sea-islands type composite fiber according to any one of claims 1 to 4, comprising a ratio (r1/r2) of a diameter r1 of the island component disposed to pass through a center of the transverse cross-section of the fiber to a diameter r2 of other island components of 1.1 to 10.0.

6. The sea-islands type composite fiber according to any one of claims 1 to 5, comprising a composite ratio (a weight ratio) of the sea component/the island component of

50/50 to 90/10.

7. The sea-islands type composite fiber according to any one of claims 1 to 6, wherein the polyether is at least one polyether selected from the group consisting of polyethylene glycol, polypropylene glycol, and polybutylene glycol.

8. The sea-islands type composite fiber according to any one of claims 1 to 7, wherein the polyether has a number average molecular weight of 2,000 to 30,000 g/mol.

9. The sea-islands type composite fiber according to any one of claims 1 to 8, wherein a copolymerization ratio of the polyether is 10 to 60% by weight.

10. The sea-islands type composite fiber according to any one of claims 1 to 9, wherein the polyetherester contains an aromatic dicarboxylic acid and an aliphatic diol as main components, and contains the polyether and an alkylene oxide adduct of a bisphenol represented by General Formula (1) below as copolymerization components:

[Chemical Formula 1]



··· (1)

wherein m and n are integers of 2 to 20 and m + n is 4 to 30.

11. The sea-islands type composite fiber according to any one of claims 1 to 10, wherein the aliphatic diol is 1,4-butanediol.

12. The sea-islands type composite fiber according to any one of claims 1 to 11, wherein the sea component is a cation dyeable polyester.

13. A false twist yarn comprising a twist of two or more of the sea-islands type composite fiber according to any one of claims 1 to 12.

14. A fiber structure comprising the sea-islands type composite fiber according to any one of claims 1 to 12 and/or the false twist yarn according to claim 13 in at least a part of the fiber structure.