SUMMARY

PROBLEMS TO BE SOLVED

[0008]

However, the method described in Patent Document 1 above has a problem that the moisture absorbing polymer is exposed on the whole fiber surface, and thus polyethylene glycol, which is a copolymerization component of the moisture absorbing polymer, elutes during a hot water treatment such as a dyeing treatment, resulting in reduced moisture absorbability after the hot water treatment.

[0009]

The method described in Patent Document 2 has a problem that the sheath component cracks upon the volume expansion of the moisture absorbing polymer of the core component during a hot water treatment such as a dyeing treatment, and dyeing specks and/or fluffs are generated, resulting in reduced quality. Furthermore, the method has a problem that the moisture absorbing polymer of the core component elutes from the cracked portion of the sheath component as a starting point, resulting in reduced moisture absorbability after the hot water treatment.

[0010]

The method described in Patent Document 3 has a problem that the sea component cracks upon the volume

expansion of the moisture absorbing polymer of the island component during a hot water treatment such as a dyeing treatment due to the small thickness of the sea component of the outermost layer relative to the fiber diameter in the transverse cross-section of the fiber, and dyeing specks and/or fluffs are generated, resulting in the reduced quality, as in the method described in Patent Document 2. Furthermore, the method has a problem that the moisture absorbing polymer of the island component elutes from the cracked portion of the sea component as a starting point, resulting in reduced moisture absorbability after the hot water treatment.

[0011]

An object of the embodiments disclosed hereinis to solve the problems of the prior art, and to provide a sea-islands type composite fiber which rarely undergoes the generation of dyeing specks and/or fluffs when the composite fiber is formed into a fiber structure such as a woven fabric or a knitted fabric, has excellent quality, has excellent moisture absorbability even after a hot water treatment such as a dyeing treatment, also has dry touch inherent to a polyester fiber when the sea component is polyester, and can be suitably used for clothing applications.

SOLUTIONS TO THE PROBLEMS

[0012]

In an aspect, 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.

[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.

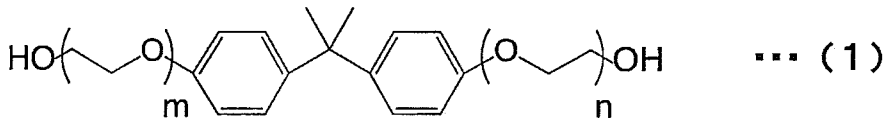
[0014]

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

is preferably 1,4-butanediol.

[0017]

[Chemical Formula 1]



··· (1)

[0018]

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

[0019]

Furthermore, the sea component of the sea-islands type composite fiber is preferably a cation dyeable polyester.

[0019a]

In another aspect, there is provided a false twist yarn comprising a twist of two or more of the sea-islands type composite fiber as defined above.

[0020]

The false twist yarn of the present disclosure includes a twist of two or more of the sea-islands type composite fiber, and can be suitably used in the fiber structure including the sea-islands type composite fiber and/or the false twist yarn in at least a part of the fiber structure.

[0020a]

In another aspect, there is provided a fiber structure comprising the sea-islands type composite fiber as defined above and/or the false twist yarn as defined above in at least a part of the fiber structure.

EFFECTS

[0021]

The fiber of the present disclosure does not undergo cracks of a sea component upon the volume expansion of a