[0006]
Patent document 1: Japanese Unexamined Patent Publication (Kokai) No. HEI 5-51852
Patent document 2: Japanese Unexamined Patent Publication (Kokai) No. 2006-77063
SUMMARY
PROBLEMS TO BE SOLVED
[0007]
However, although the method proposed in Patent document 1 is effective for producing nonwoven fabrics by meltblowing, they are poor in mechanical characteristics and wear resistance and inferior in quality due to significant dyeing specks because the compatibility between polyethylene terephthalate and polypropylene is so low that the resulting long fibers have a large fiber diameter variation among single fibers.
[0008]
Although the method proposed in Patent document 2 can serve for easy production of moldings by injection molding, the compatibility between aliphatic polyester and polyolefin is so insufficient that fibers produced by melting spinning will have large fiber diameter variations among single fibers, and accordingly, it is necessary to take measures for further improvements relating to mechanical characteristics, wear resistance and dyeing specks.
[0009]
An object of the present disclosure is to solve the above problems with the conventional techniques to provide a polymer alloy fiber having both good properties of polyolefin and those of polyester, having a depressed variation in fiber diameter among single fibers, being excellent in mechanical properties and wear resistance, suffering from few dyeing specks, and being suitable as a fiber structure.
MEANS OF SOLVING THE PROBLEMS
[0010]
There is provided a polymer alloy fiber including a polyolefin (A), a polyester (B), and a styrene - ethylene - butylene - styrene copolymer (C), having a fiber diameter CV% of 0.1% to 2.5%, and containing an island component with a dispersion diameter of 1 to 1000 nm in the fiber’s transverse cross section.
[0010a]
In an aspect, there is provided a polymer alloy fiber comprising a polypropylene (A), a polyester (B), and a styrene - ethylene - butylene - styrene copolymer (C), having a fiber diameter CV% of 0.1% to 2.5%, and containing an island component with a dispersion diameter of 1 to 1,000 nm in the fiber’s transverse cross section, wherein the main constituent component of the polyester (B) is one selected from the group consisting of an aromatic dicarboxylic acid, and aromatic diol and an aromatic hydroxycarboxylic acid.
[0011]
In addition, the styrene - ethylene - butylene - styrene copolymer (C) preferably accounts for 0.1 to 30.0 parts by weight relative to the total quantity, which accounts for 100 parts by

weight, of the polyolefin (A), the polyester (B), and the styrene - ethylene - butylene - styrene copolymer (C).

[0012]

In addition, it is preferable that the styrene - ethylene - butylene - styrene copolymer (C) contains 15.0 to 45.0 parts by weight of a styrene block (C1), that an ethylene block (C2) and a butylene block (C3) are contained at a weight ratio (C2/C3) of 0.1 to 1.0, and that at least

CLAIMS

[Claim 1]

A polymer alloy fiber comprising a polypropylene (A), a polyester (B), and a styrene - ethylene - butylene - styrene copolymer (C), having a fiber diameter CV% of 0.1% to 2.5%, and containing an island component with a dispersion diameter of 1 to 1,000 nm in the fiber's transverse cross section, wherein the main constituent component of the polyester (B) is one selected from the group consisting of an aromatic dicarboxylic acid, and aromatic diol and an aromatic hydroxycarboxylic acid.

[Claim 2]

The polymer alloy fiber as set forth in claim 1, wherein the styrene - ethylene - butylene - styrene copolymer (C) accounts for 0.1 to 30.0 parts by weight relative to the total quantity, which accounts for 100 parts by weight, of the polypropylene (A), the polyester (B), and the styrene - ethylene - butylene - styrene copolymer (C).

[Claim 3]

The polymer alloy fiber as set forth in either claim 1 or 2, wherein the styrene - ethylene - butylene - styrene copolymer (C) contains 15.0 to 45.0 parts by weight of the styrene block (C1).

[Claim 4]

The polymer alloy fiber as set forth in any one of claims 1 to 3, wherein the styrene - ethylene - butylene - styrene copolymer (C) has a weight ratio (C2/C3) between the ethylene block (C2) and the butylene block (C3) of 0.1 to 1.0.

[Claim 5]

The polymer alloy fiber as set forth in any one of claims 1 to 4, wherein the styrene - ethylene - butylene - styrene copolymer (C) contains at least one functional group selected from the group consisting of anhydride groups, amino groups, and imino groups.

[Claim 6]

The polymer alloy fiber as set forth in any one of claims 1 to 5 having a sea-island structure containing the polypropylene (A) as sea component and the polyester (B) as island component.

[Claim 7]

A fiber structure at least partly comprising the polymer alloy fiber as set forth in any one of claims 1 to 6.