attempts are made to improve the color developability by rendering dyeable polymers to be blended into polyolefins amorphous. Specifically, a dyeable polyolefin fiber in which a copolymerized polyester with cyclohexanedimethanol copolymerized is blended as a dyeable amorphous polymer into polyolefin is proposed in Patent Document 3 and a dyeable polyolefin fiber in which a copolymerized polyester with isophthalic acid and cyclohexanedimethanol copolymerized is blended as a dyeable amorphous polymer into polyolefin is proposed in Patent Document 4.

PRIOR ART DOCUMENTS

PATENT DOCUMENTS

[0007]

Patent Document 1: Japanese Patent Laid-open Publication No. H07-90783

Patent Document 2: Japanese Patent Laid-open Publication No. H04-209824

Patent Document 3: Japanese Translation of PCT International Publication No. 2008-533315

Patent Document 4: Japanese Translation of PCT International Publication No. 2001-522947

SUMMARY

PROBLEMS TO BE SOLVED

[0008]

The method described in Patent Document 1, however, requires a long processing time for ozone treatment and ultraviolet ray irradiation, leading to low productivity and difficulties in industrialization.

[0009]

In addition, in the method of Patent Document 2, color developability can be imparted to a polyolefin fiber with a dyeable polymer, but since the dyeable polymer is crystalline, the color developability is insufficient and the color lacks vividness and depth. In the methods of Patent Documents 3 and 4, although color developability is improved by rendering a dyeable polymer amorphous, vividness and depth are still insufficient.

[0010]

The challenge of the present disclosure is to solve the problems of the above-described conventional technologies and provide a dyeable polyolefin fiber in which vivid and deep color developability has been imparted to a polyolefin fiber inherently superior in lightweight property and which can be suitably employed as a fibrous structure because its oxidative decomposition during tumbler drying and its yellowing during long-term storage are suppressed.

SOLUTIONS TO THE PROBLEMS

[0011]

The above-described challenge of the present disclosure can be resolved, in an aspect, by a dyeable polyolefin fiber being a polymer alloy fiber having an islands-in-the-sea structure including a polyolefin (A) as a sea component and a copolymerized polyester (B) with cyclohexanedicarboxylic acid copolymerized as an island component, in which the dispersion diameter of the island component in a lateral fiber cross section is 30 to 1000 nm.

[0012]

Preferably, cyclohexanedicarboxylic acid is copolymerized at a ratio of 10 to 100 mol% relative to all dicarboxylic acid components in the copolymerized polyester (B).

[0013]

Furthermore, it can preferably be adopted to include a compatibilizer (C), and the compatibilizer (C) is preferably one or more compounds selected from among a polyolefin-based resin, an acrylic resin, a styrene-based resin, and a conjugated diene-based resin each containing at least one functional group selected from among an acid anhydride group, a carboxyl group, a hydroxyl group, an epoxy group, an amino group, and an imino group, and is more preferably a styrene-ethylene-butylene-styrene copolymer containing at least one functional group selected from an amino group and an

compound is an aminoether type hindered amine-based compound.

[0017]

Further, the dyeable polyolefin fiber can suitably be adopted for a fibrous structure at least partly including it.

[0017a]

In another aspect, there is provided a fibrous structure at least partly comprising the dyeable polyolefin fiber as defined above.

EFFECTS

[0018]

According to the present disclosure, it is possible to provide a dyeable polyolefin fiber being a polyolefin resin inherently superior in lightweight property but having vivid and deep color developability and being inhibited from oxidative decomposition during tumbler drying or from yellowing during long-term storage. If processed into a fibrous structure, the dyeable polyolefin fiber produced according to the present disclosure can be used favorably as clothing material and in a wide range of applications that require lightweight property and color developability in addition to interior and general material applications where conventional polyolefin-based fibers have been used.

EMBODIMENTS OF THE INVENTION

[0019]

The dyeable polyolefin fiber of the present invention is a polymer alloy fiber having an islands-in-the-sea structure including a polyolefin (A) as a sea component and a