describes such a three-dimensional shaped object of a fluororesin.

Citation List

Patent Literature

[0004]

Patent Literature 1 JP2019-194019A

Summary of Invention

Technical Problem

[0005]

Embodiments of the present disclosure provide a three-dimensional shaped object of a fluororesin which has excellent mechanical properties.

Solution to Problem

[0006]

The present disclosure encompasses the following aspects and embodiments:

According to a first aspect of the present disclosure, there is provided a three-dimensional shaped object including a fluororesin, wherein the three-dimensional shaped object is a laminate of a layer according to the slice data of the three-dimensional structure, and the three-dimensional shaped object has a tensile stress at break of 9 MPa or more, and a

tensile elongation at break in the direction perpendicular to the shaped plane of 20% or more.

In an embodiment of the above three-dimensional shaped object, the tensile stress at break is 10 MPa or more.

In an embodiment of the above three-dimensional shaped object, the tensile stress at break is 19 MPa or more.

In an embodiment of the above three-dimensional shaped object, the tensile elongation at break is 200% or more.

In an embodiment of the above three-dimensional shaped object, the three-dimensional shaped object has a surface roughness of 30 μm or less.

In an embodiment of the above three-dimensional shaped object, the fluororesin has an MFR of 0.1 g/10 mins or more.

In an embodiment of the above three-dimensional shaped object, the fluororesin is a tetrafluoroethylene-perfluoroalkoxyethylene copolymer, a tetrafluoroethylene-hexafluoropropylene copolymer, or an ethylene-tetrafluoroethylene copolymer.

According to a second aspect of the present disclosure, there is provided a method for producing a three-dimensional shaped object containing a fluororesin, including:
shaping a fluororesin powder by powder bed fusion, and
annealing after the shaping by powder bed fusion.

An embodiment of the above method for producing the three-dimensional shaped object including punching after the shaping by powder bed fusion.

In an embodiment of the above method for producing the three-dimensional shaped object, the fluororesin powder is an unmelted fluororesin powder that is subjected to another shaping by powder bed fusion and collected.

In an embodiment of the above method for producing the three-dimensional shaped object, the fluororesin has an MFR of 0.1 g/10 mins or more.

In an embodiment of the above method for producing the three-dimensional shaped object, the fluororesin is a tetrafluoroethylene-perfluoroalkoxyethylene copolymer, a tetrafluoroethylene-hexafluoropropylene copolymer, or an ethylene-tetrafluoroethylene copolymer.

Advantageous Effect of Invention

[0007]

The three-dimensional shaped object as per embodiments of the present disclosure has excellent mechanical properties.

Description of Embodiments

[0008]

The three-dimensional shaped object of the present disclosure will be described below.

[0009]

The term "three-dimensional shaped object" used herein refers to a model shaped object produced with a three-dimensional shaping device.

[0010]

The three-dimensional shaped object of the present disclosure has a tensile stress at break of 9 MPa or more, preferably 10 MPa or more, and more preferably 20 MPa or more. The tensile stress at break is preferably as high as possible; for example, the upper limit of the tensile stress at break may be, but is not limited to, 100 MPa or less.

[0011]