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]

~~It is an object~~Embodiments of the present disclosure ~~to~~ 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:

~~[1] A~~According to a first aspect of the present disclosure, there is provided a three-dimensional shaped object ~~comprising~~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.

~~[2] The~~In an embodiment of the above three-dimensional shaped object ~~according to the above [1], wherein~~, the tensile stress at break is 10 MPa or more.

~~[3] The~~In an embodiment of the above three-dimensional shaped object ~~according to the above [1] or [2], wherein~~, the tensile stress at break is 19 MPa or more.

~~[4] The three-dimensional shaped object according to any one of the above [1] to [3], wherein the three-dimensional shaped object has a tensile elongation at break of 5% or more.~~

~~[5] The three-dimensional shaped object according to any one of the above [1] to [4], wherein the tensile elongation at break is 20% or more.~~

~~[6] The~~In an embodiment of the above three-dimensional shaped object ~~according to any one of the above [1] to [5], wherein~~, the tensile elongation at break is 200% or more.

~~[7] The~~In an embodiment of the above three-dimensional shaped object ~~according to any one of the above [1] to [6], wherein~~, the three-dimensional shaped object has a surface roughness of 30 μm or less.

~~[8] The three-dimensional shaped object according to any one of the above [1] to [7], wherein the three-dimensional shaped object is subjected to punching after three-dimensional shaping.~~

~~[9] The~~In an embodiment of the above three-dimensional shaped object ~~according to any one of the above [1] to [8], wherein~~, the fluororesin has an MFR of 0.1 g/10 mins or more.

~~[10] The~~In an embodiment of the above three-dimensional shaped object ~~according to any one of the above [1] to [9], wherein~~, the fluororesin is a tetrafluoroethylene-perfluoroalkoxyethylene copolymer, a tetrafluoroethylene-hexafluoropropylene copolymer, or an ethylene-tetrafluoroethylene copolymer.

~~[11] A~~According to a second aspect of the present disclosure, there is provided a method for producing a three-dimensional shaped object containing a fluororesin, ~~comprising~~including: shaping a fluororesin powder by powder bed fusion, and annealing after the shaping by powder bed fusion.

~~[12] The~~An embodiment of the above method for producing the three-dimensional shaped object ~~according to the above [10], comprising~~including punching after the shaping by powder bed fusion.

~~[13] The method for producing the three-dimensional shaped object according to the above [11] or [12], comprising annealing after the shaping by powder bed fusion.~~

~~[14] The~~In an embodiment of the above method for producing the three-dimensional shaped object ~~according to any one of the above [11] to [13], wherein~~, the fluororesin powder is an unmelted fluororesin powder that is subjected to another shaping by powder bed fusion and collected.

~~[15] The~~In an embodiment of the above method for producing the three-dimensional shaped object ~~according to any one of the above [11] to [14], wherein~~, the fluororesin has an MFR of 0.1 g/10 mins or more.

~~[16] The~~In an embodiment of the above method for producing the three-dimensional shaped object ~~according to any one of the above [11] to [15], wherein~~, 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]