Claims

[Claim 1]

A fiber-reinforced resin hollow cylindrical body comprising a reinforcing fiber yarn and a resin composition with which the reinforcing fiber yarn is impregnated, wherein

a fiber diameter D of the reinforcing fiber yarn is in a range of 10.0 to 18.0 μm,

a weight T of the reinforcing fiber yarn is in a range of 100 to 1500 tex,

a volume content V of the reinforcing fiber yarn in the fiber-reinforced resin hollow cylindrical body is in a range of 40.0 to 80.0%, ~~and~~

the D, T and V satisfy the following formula (1)~~.~~:

the reinforcing fiber yarn is a glass fiber yarn,

the glass fiber yarn has a composition including SiO_2 in a range of 52.0 to 56.0% by mass, Al_2O_3 in a range of 12.0 to 16.0% by mass, MgO and CaO in a range of 20.0 to 25.0% by mass in total, and B_2O_3 in a range of 5.0 to 10.0% by mass, represented in terms of oxide, with respect to a total amount of the glass fiber yarn, and

a maximum shear stress of the fiber-reinforced resin hollow cylindrical body is 300 MPa or more and an elastic shear modulus of the fiber-reinforced resin hollow cylindrical body is 11.0 GPa or more:

$$0.090 \leq T^{1/4} \times V/D^3 \leq 0.155 \ldots (1).$$

[Claim 2]

The fiber-reinforced resin hollow cylindrical body according to claim 1, wherein the D is in a range of 10.5 to 16.0 μm, the T is in a range of 150 to 1100 tex, and the V is in a range of 55.0 to 75.0%, the D, T and V satisfy the following formula (2):

$$0.111 \leq T^{1/4} \times V/D^3 \leq 0.127 \ldots (2).$$

[Claim 3]

The fiber-reinforced resin hollow cylindrical body according to claim 2, wherein the D, T and V satisfy the following formula (3):

$$0.115 \leq T^{1/4} \times V/D^3 \leq 0.125 \ldots (3).$$

[Claim 4]

The fiber-reinforced resin hollow cylindrical body according to any one of claim 1 to claim 3, wherein the D is in a range of 12.0 to 15.0 μm, the T is in a range of 350 to 950 tex, and the V is in a range of 57.5 to 70.0%.

~~[Claim 5]~~

~~The fiber-reinforced resin hollow cylindrical body according to any one of claim 1 to claim 4, wherein the reinforcing fiber yarn is a glass fiber yarn.~~

[Claim ~~6~~5]

The fiber-reinforced resin hollow cylindrical body according to any one of claim 1 to claim ~~5~~4, wherein a plurality of the reinforcing fiber yarns is disposed spirally and in directions intersecting with one another in the fiber-reinforced resin hollow cylindrical body.

[Claim ~~7~~6]

The fiber-reinforced resin hollow cylindrical body according to claim ~~6~~5, being a filament winding molded article.

[Claim ~~8~~7]

A shaft material comprising the fiber-reinforced resin hollow cylindrical body according to any one of claim 1 to claim ~~7~~6.

[Claim ~~9~~8]

An energy absorbing member comprising the fiber-reinforced resin hollow cylindrical body according to any one of claim 1 to claim ~~7~~6.

[Claim ~~10~~9]

The energy absorbing member according to claim ~~9~~8, wherein the fiber-reinforced resin hollow cylindrical body comprises a taper portion at an upper end or a lower end thereof, the portion gradually tapering toward an end face.