[CLAIMS]

1. A magnet-embedded rotor incorporated in a traveling motor of a vehicle, comprising:

a laminated core including steel sheets laminated to each other and a bonding layer configured to bond the steel sheets adjacent to each other in a laminating direction; and

a magnet embedded in the laminated core,

wherein, when the rotor rotates at 11000 rpm, a maximum amount of displacement of an outer edge of the laminated core in a radial direction of the rotor is 0.1 mm or less, and

wherein, when a yield stress of the steel sheet is assumed to be YP_R (MPa), a yield stress of the bonding layer is assumed to be YP_B (MPa), and a maximum rotation speed when the vehicle travels is assumed to be ω (rpm), the following Expressions (1) and (2) are satisfied:

[Math. 1]

$$YP_B \geq A\left(\frac{\omega}{B}\right)^2\left(\omega - C\sqrt{\frac{YP_R}{D}}\right) + E \qquad \cdots (1)$$

$$0.1 \times YP_R \leq YP_B \leq 10 \times YP_R \qquad \cdots (2)$$

where, A=0.105, B=17000, C=17000, D=410, and E=30.

2. The rotor according to claim 1, wherein a yield stress YP_R of each of the steel sheets is 150 MPa or more and 580 MPa or less.

3. The rotor according to claim 1 or 2, wherein the magnet is disposed in a through hole which passes through the laminated core in the laminating direction, and

a sealing resin configured to seal between an outer surface of the magnet and an inner surface of the through hole is provided in the through hole.

4. A method for designing a magnet-embedded rotor incorporated in a traveling motor of a vehicle, in which the rotor includes:

a laminated core including steel sheets laminated to each other and a bonding layer configured to bond the steel sheets adjacent to each other in a laminating direction; and

a magnet embedded in the laminated core, and

in which, in the design method, when the rotor rotates at a maximum rotation speed when the vehicle travels, a yield stress of each of the steel sheets and a yield stress of the bonding layer are set so that a maximum amount of displacement of an outer edge of the laminated in a radial direction of the rotor is 0.1 mm or less, and

wherein, when the yield stress of the steel sheet is assumed to be YP_R (MPa), the yield stress of the bonding layer is assumed to be YP_B (MPa), and the maximum rotation speed is assumed to be ω (rpm), the yield stress YP_R of the steel sheet and the yield stress YP_B of the bonding layer are set so that the following Expressions (1) and (2) are satisfied:

[Math. 2]

$$YP_B \geq A\left(\frac{\omega}{B}\right)^2\left(\omega - C\sqrt{\frac{YP_R}{D}}\right) + E \qquad \cdots (1)$$

$$0.1 \times YP_R \leq YP_B \leq 10 \times YP_R \qquad \cdots (2)$$

where, A=0.105, B=17000, C=17000, D=410, and E=30.

5. A method for producing a rotor using the method for designing a rotor according to claim 4.