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Brake lining assembly for electric power assist bicycles

电动自行车用制动衬片总成

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Brake lining assembly for electric power assist bicycles

1 Scope

This Standard specifies the terms and definitions, classification, requirements, test methods, inspection rules, marking, packaging, transportation and storage of brake lining assembly for electric power assist bicycles.

This Standard applies to brake lining assembly for electric power assist bicycles (hereinafter referred to as lining assembly).

2 Normative references

The following documents are indispensable for the application of this document. For dated references, only the dated version applies to this document. For undated references, the latest edition (including all amendments) applies to this document.

GB/T 22309, Road vehicles - Brake linings - Shear test procedure for disc bake pad and drum brake shoe assemblies

GB/T 23263, Determination of asbestos in products

JB/T 7498, Coated abrasives - Abrasive paper

JC/T 1065, Constant speed friction test machine

JC/T 2268, Measurement of copper and other elements in brake friction materials

3 Terms and definitions

The following terms and definitions are applicable to this document.

3.1 Coefficient of friction

μ

The ratio OF the friction force TO the normal force that is applied to the test piece.

3.2 Wear

6 Test method

6.1 Appearance quality inspection

Use methods of visual inspection and knocking to check the appearance quality.

6.2 Dimension measurement

Use a vernier caliper whose accuracy is 0.02 mm to measure the width and thickness.

6.3 Friction performance test

6.3.1 Test piece

6.3.1.1 Respectively prepare the two test pieces from the friction material of the two lining assemblies, or process with the same material according to the same process.

6.3.1.2 The size of the test piece is 25 mm × 25 mm; the allowable deviation is -0.2 mm ~ 0 mm.

6.3.1.3 The thickness of the test piece is 5 mm ~ 7 mm; the thickness difference between the two test pieces is less than 0.2 mm. If the thickness of the product is less than 5 mm, use its original thickness.

6.3.2 Equipment

6.3.2.1 Constant speed friction test machine: its performance and accuracy shall meet the requirements of JC/T 1065.

6.3.2.2 Micrometer: accuracy of 0.01 mm.

6.3.3 Test conditions

6.3.3.1 The test pressure (normal force) is 0.98 MPa.

6.3.3.2 The material of the disc of the test machine shall meet the requirements of JC/T 1065. Its surface shall be treated with abrasive paper whose particle

size is P240 in JB/T 7498, so that the surface of the disc has no obvious scratches, rust, pits and other defects.

6.3.4 Test procedures

6.3.4.1 Respectively load the two test pieces into the two test piece support arms of the test machine.

6.3.4.2 Perform running-in of test pieces below 100 °C, until the contact surface reaches more than 95%. Use a micrometer whose accuracy is 0.01 mm to measure the thickness of the test piece; measure 5 points on each test piece; take the arithmetic average. The thickness measurement shall be performed after the test piece is cooled to room temperature.

6.3.4.3 When the test temperature is 100 °C, measure the friction force during the period when the disc rotates 5 000 revolutions. After the friction test, measure the thickness of the test piece according to 6.3.4.2.

6.3.4.4 At each test temperature of 150 °C, 200 °C, 250 °C, perform the same test according to 6.3.4.3. The highest test temperature of class-1 lining assembly is 200 °C; the highest test temperature of class-2 lining assembly is 250 °C. During each temperature test, the disc temperature shall rise to the specified test temperature within 1 500 revolutions. The temperature of the disc rises mainly by the friction heat of the test piece. When the specified test temperature is not reached within 1 500 revolutions, an auxiliary heating device can be used.

6.3.4.5 After the measurement of the highest test temperature is over, measure the friction force of the disc during 1 500 revolutions every time the temperature drops by 50°C from the highest test temperature, until it reaches 100 °C. The temperature drop from the previous stage to the next stage shall be completed within 500 revolutions.

6.3.4.6 After the test, visually inspect whether the test piece has cracks, bubbles, missing edges and corners, unevenness, warping, twisting, layering and other defects that affect the use, and whether the friction surface of the disc has obvious scratches and burning discoloration.

6.3.5 Calculation

6.3.5.1 The coefficient of friction of each test temperature is calculated according to Formula (1):

$$\mu = \frac{f}{F} \qquad \cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots (1)$$

Where:

7.2.3 Inspection and determination of friction performance, shear strength, asbestos content and harmful elements

7.2.3.1 The determination of friction performance, shear strength (bonding type), asbestos content and harmful elements shall be randomly sampled according to Table 8.

7.2.3.2 For friction performance, if each sample meets the requirements of this Standard, determine the friction performance of the batch of products to be qualified.

7.2.3.3 For shear strength (bonding type), if the arithmetic mean of all samples meets the requirements of this Standard, determine the shear strength of the batch of products to be qualified.

7.2.3.4 For asbestos content, if each sample does not contain asbestos, determine the asbestos content of the batch of products to be qualified.

7.2.3.5 For harmful elements, if each sample meets the limit requirements for harmful elements, determine the harmful elements of the batch of products to be qualified.

7.2.3.6 If any of the friction performance and shear strength (bonding type) is unqualified, perform double sampling and re-inspection; if the re-inspection results meet the requirements of this Standard, judge the item to be qualified; if there is still one unqualified item, judge the batch of products to be unqualified.

7.2.3.7 If any item of the asbestos content inspection and the harmful element inspection is unqualified, judge the batch of products to be unqualified.

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