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**Technical specification of solid tyres for pneumatic tyres
rims**

充气轮胎轮辋实心轮胎技术规范

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Table of Contents

Foreword.....	3
1 Scope.....	4
2 Normative references.....	4
3 Terms and definitions.....	5
4 Technical requirements.....	5
5 Test methods.....	5
6 Marking.....	6
Appendix A (Normative) Measurement methods for overall dimensions of tyres.....	7
Appendix B (Normative) Test method for static load performance of tyres.....	9
Appendix C (Normative) Test methods for physical mechanical properties of tyres..	11
Bibliography.....	13

Appendix A

(Normative)

Measurement methods for overall dimensions of tyres

A.1 Measurement items

The outer circumference and section width of the tyre.

A.2 Measurement conditions

A.2.1 After the tyre is vulcanized, it shall be parked at room temperature for more than 48 h. Before testing, the tyre and rim assembly shall be parked at a temperature of 18 °C~36 °C for at least 24 h.

A.2.2 Measurement tools and their accuracy requirements are as follows:

- a) Steel ruler and metal tape measure (without arc): 1 mm;
- b) Vernier caliper: 0.1 mm;
- c) Caliper.

A.3 Measurement methods

A.3.1 Outer circumference of tyre

Use a metal tape measure to wrap around the tyre along the centerline of the crown or near the highest point of the centerline; measure the outer circumference. The unit of measurement is mm and round up to an integer. According to formula (A.1), obtain the outer diameter.

A.3.2 Section width of tyre

Select the widest part of the sidewall without a mark; use a vernier caliper or a caliper and a steel ruler to measure the section width at four points at approximately quarters of the tyre circumference. Take the arithmetic mean. The unit of measurement is mm and round up to an integer.

A.4 Calculation method

The outer diameter of the tyre is calculated according to formula (A.1).

$$D = L / \pi \quad \dots\dots\dots (A.1)$$

Appendix B

(Normative)

Test method for static load performance of tyres

B.1 Test conditions

B.1.1 After the tyre is vulcanized, it shall be parked at room temperature for more than 48 h. Before testing, the tyre and rim assembly shall be parked at a temperature of 18 °C~36 °C for at least 24 h.

B.1.2 The appearance quality of tyres shall meet the requirements of HG/T 2177.

B.1.3 The tyre load and assembled rim should comply with the provisions of GB/T 10823.

B.1.4 The pressure-bearing plane of the testing machine shall be perpendicular to the forced direction of the tyre.

B.2 Measurement and calculation

B.2.1 Install the tyre conforming to the provisions of B.1 on the testing machine. According to the provisions of Appendix A, measure the outer diameter and section width of the tyre.

B.2.2 Apply printing oil to the pressure-bearing part of the tyre; lay a piece of white paper between the tyre and the pressure-bearing plane; start the testing machine; apply the load to the tyre to the specified value; after 15 min, measure the static load radius and section width under load of the tyre.

B.2.3 After completing the measurement in B.2.2, take out the imprint paper; use the planimeter to obtain the area S (cm²) of the imprint; round up the calculation.

B.2.4 The amount of deflection is calculated according to formula (B.1):

$$h_1 = D/2 - r_1 \quad \dots\dots\dots (B.1)$$

Where:

h_1 - The amount of deflection of tyre, in millimeters (mm);

D - The outer diameter of tyre, in millimeters (mm);

r_1 - The static load radius of tyre, in millimeters (mm).

Appendix C

(Normative)

Test methods for physical mechanical properties of tyres

C.1 General requirements

C.1.1 After the tyre is vulcanized, it shall be parked at room temperature for more than 48 h. Before testing, it shall be conditioned for at least 24 h in the standard laboratory environment specified in GB/T 2941.

C.1.2 When the surface of the sample or specimen taken from the finished product is uneven, or when the thickness is greater than the corresponding standard, it shall be cut and polished according to GB/T 2941. When the sample thickness is less than the corresponding standard, it can be cut into specimens according to the actual thickness of the sample for testing.

C.2 Tests for physical mechanical properties of rubber compound

C.2.1 Tensile properties before and after aging

C.2.1.1 When sampling, for the tread rubber part, take the centerline of the crown as the reference; take samples along the longitudinal direction. If the thickness of the tread rubber is 6 mm~10 mm, cut a layer of middle-layer specimen. If the thickness of the tread rubber is more than 10 mm, cut the specimens from middle and bottom layers (except for special cut specimens of crown pattern). For the middle part of the base rubber, take the centerline of the base rubber as the reference; cut the base rubber specimens along the longitudinal direction. For the base rubber below 25 mm, cut the upper and lower two-layer specimens. For the base rubber above 25 mm, cut the upper, middle and lower three-layer specimens. When cutting the specimen at the part of the rubber separating layer, other layers of rubber must not be attached. Take 5 specimens from each layer. The test result is the median value after removing the lowest 2 data.

C.2.1.2 Cut and polish the sample into a type-2 specimen conforming to GB/T 528; mark the position and layer of the specimen.

C.2.1.3 When the tread rubber pattern is special and cannot be cut to the standard dimension, the clamping part of the specimen can be cut according to the actual situation.

C.2.1.4 Carry out the tensile properties test according to GB/T 528. Carry out the tensile properties test after aging according to GB/T 3512.

C.2.2 Hardness

C.2.2.1 On each layer of the tread and base rubber, cut samples with a thickness of not less than 6 mm, a length of not less than 40 mm, and a width of not less than 15 mm. Except for the fiber base rubber, a maximum of 3 samples of the same layer can be stacked to form a test specimen.

C.2.2.2 According to GB/T 531.1, measure the hardness of each layer of samples. The surface hardness of the tread rubber can be measured directly at the crown of the tyre. The surface hardness of the base rubber can be measured at the part where the tyre is in contact with the contour surface curve of the rim. The arbitration shall be based on the results obtained on the test specimens made from the samples.

C.2.3 Abrasion resistance

C.2.3.1 Akron abrasion test: Take the centerline of the crown as the benchmark; cut the sample along the longitudinal direction. For samples with a tread rubber thickness of 10 mm or less, cut 2 samples with a length of about 250 mm and a width of about 15 mm~20 mm; use the surface of the tread layer as the test surface. For samples with a tread rubber thickness of more than 10 mm, cut 2 upper and lower two-layer specimens with a length of about 250 mm and a width of about 15 mm~20 mm. The upper layer takes the surface of the tread layer as the test surface. The lower layer takes the part close to the base rubber as the test surface.

C.2.3.2 Cut, grind, and bond the specimens according to the provisions of GB/T 1689.

C.2.3.3 Carry out the test according to GB/T 1689. Round off the test result to two decimal places according to the provisions of GB/T 8170.

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