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Replacing GB/T 1702-2008

Cycle tyres

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Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009.

This standard replaces GB/T 1702-2008 “Cycle tires”. As compared with GB/T 1702-2008, the main technical changes are as follows:

- MODIFY the various types of illustrations for a more complete cross-sectional view of the tire components (SEE Clause 4; Clause 4 of the 2008 version);

- MODIFY the item 3 in “Table 1 Tire performance”, changing “non-black tire sidewall resistance to ozone aging” into “sidewall rubber resistance to ozone aging”; MODIFY this performance index “Within fracturing C-2 as specified in Appendix D” into “the fracturing degree does not exceed the C-2 as specified in Appendix D” (SEE 5.3; clause 5.3 of 2008 version);

- MODIFY the item 5 in “Table 1 Tire performance”, changing the “tension strength of bead ring / KN” into “tensile strength of bead ring / KN”, and changing the “straight edge, hooked edge and hooked straight edge tire” in this performance indicator column into “the tire using steel wire or fiber material as the bead ring” (SEE 5.3; clause 5.3 of 2008 version);

- MODIFY the item 6 and item 7 in the “Table 1 Tire performance”, CHANGE the test result unit of the cord fabric tensile strength and adhesive strength from kN/m into N/mm (SEE 5.3; clause 5.3 of 2008 version);

- MODIFY the footnote “a” of Table 1, changing the tread wear test stroke from 1.6 km to 1.61 km (SEE 5.3; clause 5.3 of the 2008 version);

- In the preparation of tread wear test specimens, MODIFY the “the cut specimen is ground on a grinding wheel to a thickness of 2.0 mm ± 0.2 mm” into “the thickness of the cut specimen is 2.0 mm ± 0.2 mm” [see b) of 6.3.2; clause6.3.2.2 of 2008 version];

- In the cord tensile strength test, MODIFY the “use of cord tension tester, canvas tension tester or rubber tension tester” into the “use of tension tester” (SEE 6.7; clause 6.7 of 2008 version);

- In the adhesion strength test between tread rubber and fabric layer, MODIFY the “use rubber tension tester’s fixture to clamp the specimen” into the “use the tension tester’s fixture to clamp the specimen” (SEE 6.8.1; clause 6.8.1 of 2008 version);

- ADD the tubeless tire markings and tire direction markings (SEE 7.1; clause 7.1 of 2008 version);

Cycle tyres

1 Scope

This standard specifies the terms and definitions, types, requirements, test methods, markings, packaging, transportation, and storage of the cycle tires

This standard applies to pneumatic tires specified in GB/T 7377.

This standard does not apply to tubular racing tires and non-pneumatic tires.

2 Normative references

The following documents are essential to the application of this document. For the dated documents, only the versions with the dates indicated are applicable to this document; for the undated documents, only the latest version (including all the amendments) are applicable to this standard.

GB/T 528 Rubber，vulcanized or thermoplastic - Determination of tensile stress-strain properties

GB/T 1689 Rubber vulcanized - Determination of abrasion resistance (Akron machine)

GB/T 2941 Rubber - General procedures for preparing and conditioning test pieces for physical test methods

GB/T 6326 Tyre - Terms and definitions

GB/T 7377 Series of cycle tyres

GB/T 9749 Performance testing method for cycle tyres

HG/T 2906 Static loaded performance testing method for cycle tyres

3 Terms and definitions

The terms and definitions defined in GB/T 6326 and the following apply to this document.

3.1

Non-weighted type

6.3.1 Determination of cycle tire tread rubber wear is performed in accordance with the provisions of GB/T 1689.

6.3.2 The sample preparation is as follows:

a) At the center of the crown of the tire, CUT a specimen approximately 15 mm ~ 20 mm in width and 250 mm in length along longitudinal direction. When the tread pattern is special, and the specimen cannot be cut at the specified position, this may not be the case, but it shall be cut from the crown.

b) The cut specimen thickness is 2.0 mm ± 0.2 mm.

6.3.3 The tread rubber specimen crown rubber is ground surface.

6.3.4 If it is difficult to take sample, it can be tested by preparing the tread rubber into standard specimen in accordance with GB/T 2941.

6.4 Sidewall ozone aging resistance test

6.4.1 The sample preparation is as follows:

a) CUT a 60 mm long and 55 mm wide specimen from the sidewall of the tire, the length is along the tire circumferential direction and the width is cut in the cross-section direction. KEEP the wire near one side of the sidewall.

b) PLACE the specimen in a 60°C thermostatic device for heat treatment for 1 h, then along the cross-sectional direction, ROLL it around a φ15 mm round rod to make it a smooth, short roll, FIX the both ends.

6.4.2 The test method is as follows:

a) USE the ozone concentration (25 ± 5) × 10^{-8}, test temperature 40 °C ± 2 °C, relative humidity < 65%, test time 16 h. In accordance with the fracturing evaluation method as specified in Appendix B, EVALUATE the sidewall fracturing degree.

b) No evaluation will be made within 5 mm of the specimen fastening area.

6.5 Tire lug bending test

From the tested tire, CUT a 100 mm long tire lug rubber as the specimen, STRIP off the adhesive tape from the tire lug rubber, LET the middle part of the bottom of the specimen be in perpendicular contact with a round rod which has a diameter of 10 mm, BEND it around the rod slowly to make it into a straight angle, LET it be standing for 1 min, CHECK whether there is fracturing. The test is performed at laboratory conditions.

6.6 Tire bead tensile strength test

CUT a tire bead with a length of approximately 200 mm at the tire bead area, USE a tensile tester with an accuracy of ± 2% to perform test at room temperature, the decreasing speed of the tensile tester is 25 mm/min. If the specimen is cut from a single steel wire ring, it shall make its joint locate at the specimen center part; if it is cut from more than two steel wire rings, it shall take one of them to perform test, and its test value shall be multiplied by the number of wires. The test result is the average value of the two specimens.

6.7 Cord fabric tensile strength test

From the corresponding part of the tire crown, along the longitudinal direction of first layer of the cord fabric, MAKE a test piece with a width of 10 mm, USE the tensile tester to perform test. The test shall be carried out under laboratory conditions. The tensile speed shall be 200 mm/min ~ 300 mm/min. The spacing between the test fixtures shall be 20 mm or more. It may use either the method A or the method B.

Method A: In the test, the value at the time of simultaneous tearing of all the cords is S, the tensile strength is calculated in accordance with formula (1). Test results take the average of three specimens.

$$L = \frac{S}{b} \times \frac{P}{\mathrm{PR}} \qquad \cdots\cdots(1)$$

Where:

L - Tensile strength, in Newtons per millimeter (N/mm);

S - Measured value of tearing force, in Newtons (N);

b - Specimen width, in millimeters (mm);

P - Actual number of layers;

PR - Number of levels.

Method B: MEASURE the breaking force of a single cord of the specimen with a width of 10 mm, then CALCULATE the total breaking force of the specimen. GET the tensile strength in accordance with the formula (2). The test results are expressed as the average of the three specimens.

$$L' = \frac{S}{b} \times \frac{P}{\mathrm{PR}} \qquad \cdots\cdots(2)$$

Where:

6.11 Durability test

The durability test of the tire is carried out in accordance with the provisions of GB/T 9749.

6.12 Static load test

The static load test of the tire is carried out in accordance with the provisions of HG/T 2906.

7 Marking, packaging, transport and storage

7.1 Marking

Tires shall have the following markings, where a) ~ d) are permanent markings, and e) and f) are markings that cannot be washed off. The marking is as follows:

a) Specifications (2PR can be omitted for 2 layers), for tubeless tires, it shall be marked on the tire “TUBELESS”;

b) Trademark, manufacturer's name or place of production;

c) Recommended air pressure and recommended load;

d) The direction of tire travel (when the tread pattern has a direction of travel);

e) Production number;

f) Inspection mark.

The characters of the above markings shall not be less than 3 mm x 3 mm.

7.2 Packaging

Packaging shall meet the requirements of commodity packaging and be conducive to transportation and storage.

7.3 Transport and storage

SEE Appendix C for transport and storage.

8 Others

If there are special requirements, they can be resolved through consultation between the supplier and the purchaser in accordance with the main principles of this standard.