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Test method for air retention of motor vehicle tyres

汽车轮胎气密性试验方法

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Table of Contents

Foreword.....	3
1 Scope.....	4
2 Normative references.....	4
3 Terms and definitions	4
4 Test equipment.....	5
5 Test conditions	5
6 Test procedure	6
7 Data processing	7
8 Test report	9

Test method for air retention of motor vehicle tyres

1 Scope

This document specifies the test method for air retention of motor vehicle tyres under static conditions, including test equipment, test conditions, test procedure, data processing, and test report.

This document is applicable to the air retention test of tubeless passenger car tyres and truck tyres.

2 Normative references

The contents of the following documents, through normative references in this text, constitute indispensable provisions of this document. Among them, for dated references, only the edition corresponding to that date applies to this document. For undated references, the latest edition (including all amendments) applies to this document.

GB/T 2977 Size designation, dimensions, inflation pressure and load capacity for truck tyres

GB/T 2978 Size designation, dimensions, inflation pressure and load capacity for passenger car tyres

GB/T 6326 Tyre terms and definitions

HG/T 2177 Appearance quality of tyres

3 Terms and definitions

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

3.1

Inflation pressure loss rate

The rate of change of the inflation pressure after revision, which is obtained from the slope of the linear part fitted by the logarithm value of inflation pressure and the time curve.

and the rim (both sides), to ensure that there is no air leakage.

6.1.3 Connect the atmospheric pressure sensor and adapter to the valve stem. Check the tyre-rim assembly and the adapter (including the connection part with the sensor), to ensure that the accessories are not leaking.

6.1.4 After checking according to 6.1.2 and 6.1.3, park the tyre-rim assembly at the test temperature for 48 h (the temporarily-used spare tyre shall be parked for more than 48 h). If the inflation pressure drops more than 3 kPa during the period, follow 6.1.2 again. If necessary, reassemble the tyre and rim.

6.2 Test steps

6.2.1 Put the two test tyres prepared in accordance with 6.1 in a temperature-controllable environment; adjust the atmospheric pressure to the test inflation pressure; start the test; and ensure free air circulation. During the test, the tyre shall not be moved to avoid pressure fluctuations.

6.2.2 Continue to check and record the inflation pressure, ambient temperature, and atmospheric pressure every day. If the revised slope value changes abnormally, check again for leaks.

6.2.3 After 14 days of the test, if the difference between the inflation pressures of the two test tyres does not exceed 6 kPa, the test continues. Otherwise, recheck according to 6.1.2 and restart the test.

6.2.4 Continue the test according to the standard until the end of the test period. During the test, continue to monitor and evaluate the data results.

7 Data processing

7.1 According to formula (1), obtain the revised inflation pressure.

$$p = (p_1 + B_1)(T_2/T_1) - B_2 \quad \dots\dots\dots(1)$$

Where:

p - Revised inflation pressure, in kilopascals (kPa);

p₁ - Test inflation pressure, in kilopascals (kPa);

B₁ - Atmospheric pressure during the test, in kilopascals (kPa);

B₂ - Reference atmospheric pressure 101.3 kPa;

T₁ - Test temperature, in Kelvin (K);

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