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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 29040-2012

**Test methods of rolling resistance for motor vehicle tyres --
Single point test and correlation of measurement results**

汽车轮胎滚动阻力试验方法 单点试验和测量结果的相关性

(English Translation)

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Foreword

This standard was drafted according to the rules specified in GB/T 1.1-2009.

This Standard is modified in relation to ISO 28580.2009 "Passenger Car, Truck and Bus Tyres

- Methods of Measuring Rolling Resistance - Single Point Test and Correlation of Measurement Results".

There are some adjustments in the structure for this Standard which is compared with ISO 28580.2009; the comparison list of chapter and article numbers of this Standard and ISO

28580.2009 is given in Appendix A.

There are some technical differences between ISO 28580.2009 and this Standard, those technical differences have already been incorporated into the text and marked with perpendicular single line on the margin of relevant clauses. Appendix B gives a summary list

of these technical differences and their reasons for your reference.

To be convenient for use, the following editorial changes are also made in this Standard.

- Standard name was changed;
- Bibliography was deleted.

This national standard was proposed by China Petroleum and Chemical Industry Association.

This Standard is under the jurisdiction of National Technical Committee 19 on Tyres and Rims of Standardization Administration of China (SAC/TC 19).

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1 Scope

This Standard specifies methods for measuring rolling resistance, under controlled laboratory

conditions, for new pneumatic tyres designed primarily for use on passenger cars, and trucks.

This Standard is applicable to the new pneumatic tyres designed primarily for use on passenger cars, trucks and motorcycles. Tyres intended for temporary use only are not included in this Standard.

2 Normative References

The following document is essential for the application of this Standard. For dated references,

only the edition cited applies. For undated references, the latest edition (including any amendments) is applicable to this document.

GB/T 2977 Size Designation, Dimensions Inflation Pressure and Load Capacity for truck

tyres

3 Terms and Definitions

For the purpose of this Standard, the terms and definitions defined in GB/T 6326 apply.

Type of parasitic loss measurement in which the tyre is kept rolling, without slippage, while reducing the tyre load to a level at which energy loss within the tyre itself is virtually zero.

A virtual laboratory that is established on the base of test data of compare laboratory.

4 Test Methods

The four alternative measurement methods listed below are given in this national standard.

The choice of an individual method is left to the tester. For each method, the test measurements shall be converted to a force acting at the tyre/drum interface. The four measured parameters are.

5 Test Equipment

Measurement of these parameters shall be sufficiently accurate and precise to provide the required test data. The specific and respective values are shown in Appendix C.

The reference ambient temperature, measured at a distance 0.15 m ~ 1 m from the tyre sidewall, shall be 25 °C.

Care should be taken to ensure that the temperature of the test drum surface is the same as

the ambient temperature at the beginning of the test.

6 Test Conditions

The value shall be obtained at the appropriate drum speed specified in Table 1.

The inflation pressure shall be in accordance with that shown in Table 2 and shall be capped with the accuracy specified in Clause C.4.

7 Test Procedure

The steps described in 7.4 to 7.6 shall be carried out once if the measurement standard deviation, determined in accordance with 10.6.3, is.

8 Data Interpretation

The parasitic losses, F_{pl} , expressed in newtons, are calculated by means of Equation (1).

The parasitic losses, F_{pl} , expressed in newtons, are calculated by means of Equation (4).

The rolling resistance, F_r , expressed in newtons, is calculated by means of Equation (6).

9 Data Analysis

The temperature scope shall be from 20 °C to 30 °C. If measurements at temperatures other

than 25 °C are unavoidable, then a correction for temperature shall be made by means of

Equation (10), where F_{r25} is the rolling resistance at 25 °C, expressed in newtons.

Where the number n of measurements is greater than 1, if required by 10.6, the measurement

result shall be the average of the C_r values obtained for the n measurements, after the corrections described in 9.2 and 9.3 have been made.

10 Measurement Machines Alignment and Monitoring Requirements

Measured rolling resistance value shall be rounded to two decimal places after thermometric

correction and drum diameter correction. All values shall be rounded off, except for the values

of final correction equation.

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