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

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**Method for measuring relative wet grip performance of  
passenger car tyres  
(English Translation)**

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### 1 Scope

This Standard specifies the method for measuring relative wet grip braking performance index to a reference under loaded conditions for new tyres for use on passenger cars on a wet-paved surface.

This Standard uses the test method comparing with standard reference candidate tyres.

This Standard applies to new passenger car tyres.

### 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) is applicable to this

Document.

GB/T 6326 Tyre Terms and Definitions (GB/T 6326-2014, ISO 4223-1:2002, NEQ)

GB 9743 Passenger Car Tyres

ASTM E303-93 (re-confirmed in 2013) Standard Test Method Measuring Surface Frictional Properties Using the British Pendulum Tester

ASTM E965-96 (re-confirmed in 2006) Standard Test Method for Measuring Pavement Macrotexture Depth Using a Volumetric Technique

### **3 Terms and Definitions**

For the purposes of this Document, the terms and definitions given in GB/T 6326 and the following apply.

#### **3.1 Candidate tyre**

Candidate tyre (set) that is part of an evaluation programme.

#### **3.2 Standard reference test tyre; SRTT**

A dedicated set of test tires used as a benchmark in the evaluation system. In order to minimize their variation, these tires have strictly controlled design characteristics and are produced, controlled and stored according to relevant standards.

#### **3.3 Control tyre**

Tyre (set) that is part of an evaluation programme; it is an intermediate tyre (set) which is used when the candidate tyre and the reference tyre cannot be directly compared on the same vehicle.

#### **3.4 Braking force of a tyre**

Longitudinal force, expressed in newtons, resulting from braking torque application.

#### **3.5 Braking force coefficient of a tyre; BFC**

Ratio of braking force to vertical load.

#### **3.6 Peak braking force coefficient of a tyre**

Maximum value of tyre braking force coefficient that occurs prior to wheel lockup as the braking torque is progressively increased.

#### **3.7 Lockup of a wheel**

Condition of a wheel in which its rotational velocity about the wheel spin axis is zero and it is prevented from rotating in the presence of applied wheel torque.

#### **3.8 Vertical load**

Normal reaction of the tyre on the road.

### 3.9 Tyre test vehicle

Dedicated vehicle which has instruments to measure the vertical and the longitudinal forces on one tyre during braking.

## 4 Classification of Test Method

There are two ways to test the grip performance of tires on wet roads:

- vehicle method consisting of testing a set of tyres mounted on a standard vehicle;
- test method using a trailer or a tyre test vehicle equipped with the candidate tyres.

deviation of the braking position on the test road surface during the test is required to be within 2m.

Where:

t - test road surface temperature under wetting condition, in °C.

## 5.2 Spraying requirements of test road surface

### 5.2.1

The water spraying device shall be installed on the side of the test road or on the tire test vehicle (trailer). If the roadside spraying is used, it shall be sprayed at least 0.5h before the test to achieve the balance between the test road surface temperature and the water temperature.

### 5.2.2

During the whole test process, the water spraying state shall be maintained. The water film thickness measured from the middle position of the test road surface shall be controlled within the range of  $1.0\text{mm}\pm 0.5\text{mm}$ ; and the water film thickness shall be uniform throughout the test cycle.

## 5.3 Climatic conditions

### 5.3.1

The interference of excessive wind speed on the slippery road surface shall be avoided, and barrier devices can be used if necessary.

### 5.3.2

When testing snow tires, the temperature of the wet road and the surrounding environment shall be  $2^{\circ}\text{C}\sim 20^{\circ}\text{C}$ ; and when testing ordinary tires, it shall be  $5^{\circ}\text{C}\sim 35^{\circ}\text{C}$ . During the test, the temperature change of the wet road surface shall not exceed  $10^{\circ}\text{C}$ . The ambient temperature shall be similar to the wet road surface temperature, and the temperature

difference shall not exceed 10°C.

## 5.4 Standard test tires

The standard test tire specification is 225/60R16 97S, and the standard test tire of this specification shall meet the requirements of the standards of relevant Chinese organizations.

## 6.1 Principle

The test method covers a procedure for measuring the deceleration performance of passenger car tyres during braking, using an instrumented passenger car having an Antilock Braking

System (ABS). Starting with a defined initial speed, the brakes are applied hard enough on four wheels at the same time to activate the ABS. The average deceleration is calculated between

Temperature correction

Average of peak braking force coefficient Peak braking force coefficient (measured)

Temperature correction

## 6.5.1 Tyre preparation and pre-running

### 6.5.1.1

The candidate tyres shall be new tyres produced in the same batch that meet the requirements of GB 9743; and all test tires shall have no tread vent beard and mold seams.

### 6.5.1.2

Use conventional installation methods to install the candidate tyre on the rim used by the test vehicle. For ease of installation, it is allowed to use suitable lubricants, but the use of lubricants shall not be excessive to prevent the tyre from slipping on the rim.

### 6.5.1.3

All assembled candidate tyres shall be placed under the same environmental conditions at the test site for at least 2 hours to ensure the same temperature as the surrounding environment.

Protect from heat from the sun.

### 6.5.1.4

Carry out at least 2 braking runs according to the provisions of 6.4 as the pre-running of the candidate tyre.