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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 29042-2020

Replacing GB/T 29042-2012

Thresholds and grading of rolling resistance for motor vehicle tyres

汽车轮胎滚动阻力限值和等级

Issued on: December 14, 2020 **Implemented on: November 1, 2021**

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Standardization Administration of China

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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 29042-2012 "Thresholds of rolling resistance for motor vehicle tyres"; compared with GB/T 29042-2012, the main technical changes, except editorial changes, are as follows: -- Adjust the thresholds of rolling resistance coefficient for tyres (see 4.1; Chapter 4 of version 2012); -- Add the requirements for grading of rolling resistance coefficient for tyres (see 4.2); -- Add thresholds and grading cut-off values of rolling resistance coefficient for tyres during consistency check (see 4.3); -- Add determination for the grading cut-off values of the rolling resistance coefficient for tyres (see 4.4.2); -- Delete the inspection rules (see Chapter 6 of version 2012); -- Delete the tyre rolling resistance drum tester (dynamometric method) calibration specification (see Appendix A of version 2012). This Standard was proposed by China Petroleum and Chemical Industry Federation. This Standard shall be under the jurisdiction of National Technical Committee on Tyres and Rims of Standardization Administration of China (SAC/TC 19). The drafting organizations of this Standard: Beijing Research and Design Institute of Rubber Industry Co., Ltd., Shandong Linglong Tyre Co., Ltd., Triangle Tyre Co. Ltd., Sailun Group Co., ltd., Giti Radial Tire (Anhui) Company Ltd., Zhongce Rubber Group Co., Ltd., Doublestar Group Co., Ltd., Double Coin Holdings Group Shanghai Tyre Research Institute Co, LTD, Aeolus Tyre Co., Ltd., Wanli Tire Corporation Limited, Chaoyang Longmarch Tyre Co., Ltd., Qingdao Sentury Tire Company Limited, Sichuan Tyre And Rubber Co., Ltd., Xiamen Zhengxin Rubber Industry Co., Ltd., Guizhou Tyre Co., Ltd., Prinx Chengshan (Shandong) Tire Company Ltd., Jiangsu General Science Technology Co., Ltd., Shandong Huasheng Rubber Co., Ltd., Shandong Jinyu Tyre Co., Ltd, Shandong Xinghongyuan Tyre Co., Ltd., China Quality Certification Center, Bridgestone (China) Investment Co., Ltd., Continental Tires (China) Co., Ltd., Michelin (China) Investment Co., Ltd., Dalian Goodyear Tire Co., Ltd., SUMITOMO Rubber (China) Co., Ltd., YOKOHAMA Rubber (China) Co., Ltd., Hankook Tire Co., Ltd., Shantou Haoda Tires Testing Equipment

Co., Ltd., SAIC-GM-Wuling Automobile. The drafters of this Standard: Wang Kexian, Xu Lihong, Chen Shaomei, Hou Jingbin, Cheng Hongfang, Zha Lei, Chai Delong, Wang Jun, Li Bowei, Liu Yuwan, Luo Jiliang, Thresholds and grading of rolling resistance for motor vehicle tyres

1 Scope

China's national standard for the rolling resistance thresholds and grading of motor vehicle tyres. It specifies the threshold values and the grading requirements for the rolling resistance coefficient, the threshold and grading cut-off values applicable during consistency checking, and the determination of those cut-off values, together with the test methods by which the coefficient is established. Rolling resistance is the energy a tyre loses to deformation as it rolls, and on a passenger car it accounts for a substantial share of the fuel used at steady speed. Reducing it is one of the few levers that improves the fuel consumption of every vehicle already on the road rather than only of new ones, which is why it is regulated. The difficulty is that the tyre maker faces a genuine trade-off: the compound changes that reduce rolling resistance tend to reduce wet grip, and a tyre optimised for one is worse at the other. A threshold alone therefore does the job crudely - it removes the worst tyres and gives no credit for going further. The 2020 revision addresses that. It adjusts the threshold values downwards, and it adds a grading system: the tyre is not merely compliant or not, but placed in a class, so that a better tyre can be identified and sold as one. It also adds the threshold and grading cut-off values that apply during consistency checking - the surveillance testing that verifies production tyres against the value declared for the type - and the method for determining those cut-offs. And it deletes the inspection rules and the calibration specification for the rolling resistance drum tester, both of which now live in the test method standards where they belong. The annex on establishing the benchmark laboratory is normative: rolling resistance measurements vary between machines, and a reference laboratory is what makes national grading possible at all. Issued on 14 December 2020 and in force since 1 November 2021, it replaces GB/T 29042-2012.

This Standard specifies terms and definitions for thresholds and grading of rolling resistance for motor vehicle tyres, requirements and test methods for thresholds and grading of rolling resistance coefficient. This Standard applies to new radial tyres for passenger cars and new radial tyres for miniature and light trucks and new radial tyres for trucks. However, it does not include: tyres whose nominal diameter of rims is not greater than 10 inches and nominal diameter of rims is not less than 25 inches; T-type spare tyres for temporary use only; ST metric tyres for road-type trailers, and radial tyres with high throughput for light trucks; truck tyres with a speed capacity of less than 80 km/h (excluding); racing tyres, studded tyres and special off-road tyres.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

GB/T 6326, Tyre terms and definitions

GB/T 8170, Rules of rounding off for numerical values & expression and judgment of limiting values

GB/T 29040, Test methods of rolling resistance for motor vehicle tyres - Single point test and correlation of measurement results

3 Terms and definitions

Terms and definitions determined by GB/T 6326 and GB/T 29040, as well as the following ones, are applicable to this document.

3.1 professional off-road tyre Tyres primarily designed for use in harsh off-road conditions. For passenger car tyres and miniature and light truck tyres with a single tyre load index of not more than 121 and a speed class of N and above, the groove depth of the pattern is not less than 11

Appendix A

(Normative) Establishment of the tyre rolling resistance test benchmark laboratory A.1 Basic requirements A.1.1 The technical conditions and equipment requirements of the comparison laboratory shall comply with the provisions of GB/T 29040. A.1.2 The comparison laboratory shall monitor the equipment with control tyres for no less than 3 times a month in accordance with the provisions of GB/T 29040 to ensure that the test equipment meets the requirements. A.1.3 The comparison laboratory shall pass the accreditation of the corresponding national laboratory and obtain the nationally recognized qualification certificate. A.2 Establishment of the benchmark laboratory A.2.1 The benchmark laboratory is established based on the test data of multiple comparison laboratories. Two benchmark laboratories shall be established, respectively for:

a) Test of rolling resistance of passenger car tyres and miniature and light truck tyres with a single tyre load index not greater than 121;

b) Test of rolling resistance of miniature and light truck tyres with a single tyre load index greater than 121 and truck tyres. A.2.2 The relevant departments (third parties) shall be responsible for the establishment of the benchmark laboratory, and uniformly stipulate the quantity, requirements and serial number of the laboratory and confirm every two years. A.2.3 The establishment unit of the benchmark laboratory is responsible for establishing the

correlation between the benchmark laboratory and each comparison laboratory, and gives a correlation coefficient for each comparison laboratory, and publish the correlation coefficient every two years. A.2.4 A set of calibration tyres shall be used for the establishment of each benchmark laboratory; each set of calibration tyres shall be at least 5 tyres of different specifications. These tyres shall meet the following requirements: