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

GB/T 4501-2023

Laboratory test methods for truck and bus tyres capabilities

载重汽车轮胎性能室内试验方法

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Foreword

This document was issued on 17 March 2023 by the State Administration for Market Regulation; Standardization Administration of the PRC and takes effect on 1 October 2023.

It is a GB/T standard: recommended rather than compulsory, but it is the text a Chinese reviewer applies when assessing a submission.

1 Scope

GB/T 4501-2023 covers the indoor bench testing that decides whether a truck or bus tyre performs as its markings claim - the test equipment and the accuracy each instrument has to hold, the terms that fix what a quantity such as drum surface speed actually means, the test methods themselves, the judgment rules that turn a set of readings into a pass or a fail, and the content of the test report. Among them the plunger test: a hemispherical indenter, sized from the tables according to whether the tyre belongs to the metric or the inch series, is pressed into a tyre mounted on a measuring rim taken from GB/T 2977 and inflated to the pressure matching the load marked on its sidewall, and the destructive energy absorbed before the carcass gives way is recorded at every test point. Judgment is made point by point, so one weak spot fails the tyre instead of being averaged away, which matters because a carcass opened by a kerb or by road debris deflates a loaded vehicle at

speed. Annex C ties tyre speed symbols to speeds, and Annexes A and B trace the structure and the technical departures from ISO 10454:1993. Written for tyre makers, test laboratories and the certification bodies that audit them.

This document describes the laboratory test method for the performance verification of truck and bus tyres, including test equipment and accuracy, test conditions, test steps, judgment rules and test report. Of the test methods proposed, only certain test methods are applied depending on the type of tyre to be tested.

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 6326-2014, ISO 4223-1:2002, NEQ)

3 Terms and definitions

For the purposes of this document, the terms and definitions defined in GB/T 6326 as well as the followings apply.

The linear velocity of the drum surface along the circumferential direction when the steel test drum rotates.

4 Test equipment and its accuracy requirements

The end of the indenter is hemispherical. The metric series tyres for trucks and buses adopt different indenter diameters according to the provisions in Table 1. Inch series tyres for trucks and buses adopt different indenter diameters according to the provisions in Table 2.

The indenter device shall be able to apply the load gradually and incrementally.

Force and displacement indicators are accurate to $\pm 1\%$ of full scale.

5 Test methods

The test rim shall comply with the regulations on measuring rims in GB/T 2977 or other relevant industry technical documents. Mount the test tyre on the test rim. Fill

with the air pressure corresponding to the load capacity marked on the sidewall of the tyre.

6 Judgment rules

When the destructive energy value of each test point of the metric series tyres for trucks and buses is not less than the specified value in Table 5, it is judged as "pass the test".

If the destructive energy value of a test point is less than the specified value in Table 5, it is judged as "fail the test".

When the destructive energy values of each test point of the inch series tyres for trucks and buses are not less than the specified value in Table 6, it is judged as "pass the test".

If the destructive energy value of a test point is less than the specified value in Table 6, it is judged as "fail the test".

7 Test report

The test report shall include the following.

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Annex A for a list of structure number changes between the two documents.

Compared with ISO 10454.1993, this document has many technical differences. A single vertical line (|) is used to mark the outer margin of the terms involved. See Annex B for a list of these technical differences and their causes.

The following editorial changes are made to this document.

- In order to coordinate with the existing standard, the name of the standard is changed to "Laboratory test methods for truck and bus tyres capabilities";
- Add GB/T 2977 as an informative reference;
- Add Annex A (informative) Comparisons on structure numbers between this document and ISO 10454.1993;
- Add Annex B (informative) Technical differences between this document and ISO 10454.1993 and their reasons;

- Delete the non-standard tyre test conditions in Annex A (informative) of ISO 10454.1993;

- Delete the bibliography in Annex B (informative) of ISO10454.1993.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. The issuing authority shall not be held responsible for identifying any or all such patent rights.

This document was proposed by China Petroleum and Chemical Industry Federation.

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

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