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Truck and bus tyres — Verifying tyre capabilities — Laboratory test methods

Pneumatiques pour camions et autobus — Vérification de l'aptitude des pneumatiques — Méthodes d'essai en laboratoire

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Foreword

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This document was prepared by Technical Committee ISO/TC 31, *Tyres, rims and valves*, Subcommittee SC 4, *Truck and bus tyres and rims*.

This second edition cancels and replaces the first edition (ISO 10454:1993), which has been technically revised.

The main changes are as follows:

— the endurance test for tyres with speed symbol Q and above is replaced by the high-speed performance test for light commercial vehicle (LT/C) tyres in 5.3;

— test conditions for tyres with speed symbol E and load index > 121 and speed symbol N are introduced in the endurance test in Table 3;

— test conditions for drums with diameters different than 1,7 m are introduced in the endurance test in Table 3;

— the description of the strength test in 5.1. is revised;

— tyres that are not marked with load indices are considered.

Any feedback or questions on this document should be directed to the user’s national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

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Truck and bus tyres — Verifying tyre capabilities — Laboratory test methods

1 Scope

This document specifies laboratory test methods for verifying the capabilities of truck and bus tyres. Of the test methods presented, only some will be required, depending on the type of tyre to be tested.

This document applies to all truck and bus tyres.

The test methods presented in this document do not apply to the gradation of tyre performance or quality levels.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

ISO 4209-1, *Truck and bus tyres and rims (metric series) — Part 1: Tyres*

ISO 4223-1, *Definitions of some terms used in the tyre industry — Part 1: Pneumatic tyres*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 4223-1 and the following apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1
bead separation
breakdown of bond between components in the bead area

[SOURCE: ISO 4223-1:2017, 3.8.1]

3.2
belt separation
parting of rubber compound between belt layers or between belts and plies

[SOURCE: ISO 4223-1:2017, 3.8.2]

3.3
chunking
breaking away of pieces of either the tread or the sidewall, or both

[SOURCE: ISO 4223-1:2017, 3.8.3, modified — "breaking away of pieces of the sidewall" added.]

3.4
cord separation
parting of the cords from their rubber coating

[SOURCE: ISO 4223-1:2017, 3.8.4]

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3.5
cracking
any parting within the tread, sidewall or innerliner of the tyre that may extend to cord material

[SOURCE: ISO 4223-1:2017, 3.8.5]

3.6
innerliner separation
parting of innerliner from cord material in the carcass

3.7
maximum load rating
reference mass corresponding to the load index used to define the load capacity of the tyre or the maximum load marked on the tyre

3.8
open splice
any parting at any junction of tread, sidewall or innerliner that extends to cord material

[SOURCE: ISO 4223-1:2017, 3.8.11]

3.9
ply separation
parting of adjacent plies

[SOURCE: ISO 4223-1:2017, 3.8.7]

3.10
sidewall separation
parting of the rubber compound from the cord material in the sidewall

3.11
special tread tyre
tyre with a tread pattern that is primarily designed to provide satisfactory performance under special service conditions

Note 1 to entry: Examples of special service conditions are mixed on- and off-road use or use on city busses.

3.12
test rim
any rim on which a tyre is allowed to be fitted in accordance with ISO 4209-1 and whose contour is one of those specified for the fitment of the test tyre

3.13
test drum speed
peripheral speed of the steel test drum

3.14
tread separation
pulling away of the tread from the tyre carcass

[SOURCE: ISO 4223-1:2017, 3.8.9]

3.15
light-truck or commercial tyre
LT/C tyre
tyre designed primarily for light-duty trucks and cargo vans and marked with "LT", "C" or "CP"

3.16
reference test inflation pressure
<LT/C tyre> minimum cold inflation pressure for the maximum load rating of the tyre in single formation

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3.17
speed symbol
letter code reported in Table 1 which defines the maximum speed which the tyre can sustain

Table 1 — Speed symbols

Speed symbol	Corresponding speed km/h
E	70
F	80
G	90
J	100
K	110
L	120
M	130
N	140
P	150
Q	160
R	170
S	180
T	190
U	200
H	210

4 Test equipment

The test equipment consists of items in 4.1 to 4.3.

4.1 Test drum, cylindrical driven flywheel (drum) having a diameter of 1,7 m ± 1 % or 2 m ± 1 % or, for the endurance test specified in 5.2, having a larger diameter.

The surface of the drum shall be smooth steel. The width of the test surface shall be equal to or exceed the overall width of the test tyre.

For the test drum, the loading device may be a dead-weight cantilevered system with a hydraulic or pneumatic system. The accuracy shall be within ±1,5 % of the full scale.

For the test drum, the speed capability of the equipment shall be adequate for the requirements of the test methods. The accuracy of the test drum speed shall be within $^{+2}_{0}$ km/h at the full scale.

4.2 Plunger, cylindrical steel plunger of sufficient length with a hemispherical end and a diameter as shown in Table 2, with reference to the tyre load index.

For the plunger equipment, the loading device shall permit gradual application of the force. Indicators of displacement and of force shall be provided with an accuracy within ±1 % of full scale.

For the plunger equipment, the speed of the displacement shall be controlled with an accuracy within ±3 % of the full scale.

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