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Introduction

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Template for comments and secretariat observations

Date: xx/xx/20xx	Document: ISO/DIS xxxx
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1	2	(3)	4	5	(6)	7
MB	Clause No./ Subclause No./Annex (e.g. 3.1)	Paragraph/ Figure/Table/Note	Type of comment	Comment (justification for change) by the MB	Proposed change by the MB	Secretariat observations on each comment submitted
	3.1	Definition 1	ed	Definition is ambiguous and needs clarifying.	Amend to read '...so that the mains connector to which no connection...'	
	6.4	Paragraph 2	te	The use of the UV photometer as an alternative cannot be supported as serious problems have been encountered in its use in the UK.	Delete reference to UV photometer.	



DRAFT International Standard

ISO/DIS 18511-1

Tyre abrasion rate measurement methods —

Part 1: Outdoor test method by using vehicles on road

ICS: 83.160.10

ISO/TC 31

Secretariat: **ANSI**

Voting begins on:
2024-03-26

Voting terminates on:
2024-06-18

This document is circulated as received from the committee secretariat.

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 31, *Tyres, rims and valves*.

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.

Introduction

The generation rate of tyre and road wear particles by a tyre (“tyre abrasion”) is one out of a multitude of requirements considered by manufacturers during the design and development of a tyre. An efficient on-vehicle test method is needed that can be conducted to reflect real-world driving conditions, while minimizing sources of variability, including weather and other environmental factors.

This document specifies a test method using a convoy of vehicles on public open roads. This document provides necessary specifications and procedures to measure the abrasion rate of passenger car tyres. It incorporates all relevant international standards for equipment, measurement uncertainty, and test procedures.

Tyre abrasion rate measurement methods —

Part 1: Outdoor test method by using vehicles on road

1 Scope

This document specifies methods for measuring tyre-to-road abrasion rate on open road circuits, in an actual driving environment.

This document is applicable to passenger cars pneumatic tyres subject to ISO 4000-1 with the following exclusions:

- Tyre not homologated for on road permanent usage (e.g., competition tyres)
- Free rolling tyres (trailers, caravan...)
- Light Truck (LT) tyres
- Tyres fittable only on vehicle without driving license
- Temporary tyres (marked “temporary” only)
- Tyres fitted with additional devices to improve traction properties (e.g., studded tyres);
- Tyres designed only to be fitted to vehicles registered for the first time before 1 October 2000;
- Professional off-road tyres.
- Tyres which cannot be fitted on 4 positions of at least one vehicle
- Ice Grip tyres (as defined by ISO 19447)

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 4000-1, *Passenger car tyres and rims – Part 1: Tyres (metric series)*

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

ISO 19447:2021, *Passenger car tyres — Method for measuring ice grip performance — Loaded new tyres*

ISO 80000-2 2-6.7

UN regulation 154

ASTM F3676-23

ASTM F3675-23

3 Terms and definitions

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

ISO maintain terminological database for use in standardization is at the following address:

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

3.1

Loop

Section of the circuit having the same starting and ending point.

3.2

Circuit

Predefined set of road segments, structured in *loops* [3.1](#)), used for the abrasion test, which can be driven in both directions. The circuit can consist of one or several loops, which can be run in any order. If the same loop is run clockwise and counterclockwise, it shall be considered as 2 loops.

3.3

Shift

The period of time required to run the circuit (including break time, rotation time between vehicle in convoy or time driving vehicle). By work regulation, a shift duration is often limited to 8 hours.

3.4

Total distance run by the test tyres

Circuit length multiplied by the number of shifts run during the test.

3.5

Electric machine

Energy converter transforming between electrical and mechanical energy.

3.6

Category of propulsion energy converter

Internal combustion engine, or an electric machine.

3.7

Hybrid vehicle

Vehicle equipped with a powertrain containing at least two different categories of propulsion energy converters and at least two different categories of propulsion energy storage systems.

3.8

HEV

Hybrid electric vehicle Vehicle with at least one REESS ([3.13](#)) and one fuelled power source for vehicle propulsion

EXAMPLE ICE or fuel cell systems are typically types of fuelled power sources.

3.9

NOVC-HEV

Not off-vehicle charging hybrid electric vehicle Hybrid electric vehicle that cannot be charged from an external source.

3.10

OVC-HEV

Off-vehicle charging hybrid electric vehicle Hybrid electric vehicle that can be charged from an external source.

3.11

PEV

Pure electric vehicle Vehicle equipped with a powertrain containing exclusively electric machines as propulsion energy converters and exclusively rechargeable electric energy storage systems as propulsion energy storage systems.

3.12

ICE

Pure internal combustion engine vehicle Vehicle where all propulsion energy converters are internal combustion engines.

3.13

REESS

Rechargeable electric energy storage system An electric energy storage system that is rechargeable and provides electric energy for propulsion.

3.14

FWD

Front Wheel Drive vehicle Vehicle where only the front axle delivers traction torque

3.15

RWD

Rear Wheel Drive vehicle Vehicle where only the rear axle delivers traction torque

3.16

4WD

4 Wheel Drive vehicle Vehicle where one of the axle traction torque can be switched off by the driver.

3.17

AWD

All Wheel Drive vehicle Vehicle with permanent or vehicle-controlled four-wheel drive.

3.18

Reference vehicle

Vehicle fitted with the reference tyres

3.19

Candidate vehicle

Vehicle fitted with candidate tyres

3.20

Test vehicle

Candidate or Reference vehicle

3.21

f2 coefficient

Road load coefficient pursuant to UN regulation 154 that describes the dependence of the driving force on the square of the vehicle speed. f2 coefficient may be found in vehicle certificate of conformity. It is determined according to UN R 154. It is expressed in $\text{N}/(\text{km}/\text{h})^2$

3.22

Longitudinal Acceleration

Vehicle acceleration in the longitudinal axis of the vehicle. Longitudinal acceleration shall be taken as positive when the vehicle speed increases and as negative when the vehicle speed decreases (e. g. braking). It is expressed in m/s^2 .

3.23

Lateral Acceleration

Vehicle acceleration in the lateral axis of the vehicle. Lateral acceleration shall be taken as positive when the vehicle speed is turning left and as negative when the vehicle is turning right. It is expressed in m/s^2 .