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Cestna vozila - Dodatne naprave za oprijem pnevmatik na osebnih in lahkih tovornih vozilih - 1. del: Splošne varnostne in zahtevane lastnosti

Road vehicles - Supplementary grip devices for tyres of passenger cars and light duty vehicles - Part 1 : General safety and performance requirements

Straßenfahrzeuge - Zusätzliche Gleitschutzvorrichtungen für Reifen an Personenfahrzeugen und leichten Nutzfahrzeugen - Teil 1: Sicherheitstechnische Anforderungen und Prüfverfahren

Véhicules routiers - Dispositifs supplémentaires d'adhérence pour pneumatiques de véhicules particuliers et de véhicules utilitaires légers - Partie 1 : Exigences générales de sécurité et de performance

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Véhicules routiers - Dispositifs supplémentaires d'adhérence pour pneumatiques de véhicules particuliers et de véhicules utilitaires légers - Partie 1 : Exigences générales de sécurité et de performance

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European foreword

This document (prEN 16662-1:2017) has been prepared by Technical Committee CEN/TC 301 “Road Vehicles”, the secretariat of which is held by AFNOR.

This document is currently submitted to the CEN Enquiry.

1 Scope

This European Standard provides specifications for safety, quality and performance requirements for supplementary grip devices, commonly called "SGDs", for type – approved tyres according to the current legislation, intended to be fitted on tyres on vehicles in categories M1, N1, O1, O2 and relevant sub-categories (off road vehicles).

The requirements contained in prEN 16662-1 apply to all SGDs, regardless of the material/technology used to build it.

In case there are available standards for the specific technology of the device, they are intended to be used in conjunction with prEN 16662-1.

In case no standard is available for the specific technology, prEN 16662-1 applies.

All tests included within this standard are intended to be performed with activated ABS.

NOTE The choice of performing additional tests with ABS disengaged is left to each manufacturer to decide individually.

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)*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

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

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

3.1
Supplementary Grip Device
SGD
device for the increasing of force transmission, in particular on snow and ice

Note 1 to entry: If not differently specified, this term identifies the Sample SGD.

3.2
tyre tread
part of the tyre directly in contact with the road surface

3.3
SGD tread surface
elements of the SGD between the tyre tread and the road surface

3.4
product hazard
defects implying a not acceptable loss of safety

Note 1 to entry: These hazards may occur through e.g. holes, breakages, SGD falling off the tyre, etc.

Note 2 to entry: Safety risks need to be defined in the manufacturer's manual.

3.5
SGD type
SGD group having common physical characteristics and structure

Note 1 to entry: Common characteristics mean i.e. geometry, material. Size of a SGD type may vary.

3.6
sample SGD
SGD to be tested

3.7
reference SGD
SGD fulfilling all the safety and performance requirements and taken as a basis for evaluating all other types of sample SGDs during the comparison tests

Note 1 to entry: See Annex A.

3.8
fabric material
material composed by compacted textile fibers

3.9
fabric SGD
SGD whose tread surface is in majority composed by fabric material

3.10
non-metallic net SGD
SGD forming a net pattern, whose tread surface is in majority composed by non-metallic materials

3.11
metallic SGD
SGD whose tread surface is in majority composed by metallic components

3.12
hybrid SGD
SGD whose tread surface combines either several materials and/or several technologies

3.13
variation of geometry
visually recognizable modification of all the elements of the SGD

3.14
efficiency
rate between the average values obtained with the sample SGD and the reference SGD

4 Requirements

4.1 General provisions

4.1.1 Size

The size of the SGD shall correspond to the tyre size list supplied by the SGD manufacturer.

4.1.2 Adaptability

The SGDs shall be adjustable to the shape and dimension of the tyres for which they are intended.

4.1.3 Design

After mounting and tensioning the SGD, no more than 1/8 of the wheel circumference may remain SGD-free in any part of the tyre tread.

4.1.4 Static envelope

With vehicle stopped, the additional envelope of the SGD fitted on the tyre shall not be greater than:

— 20 mm on the internal side;

— 20 mm on the tyre tread;

— 25 mm on the external side (restricted to the tyre zone);

— 30 mm (only in case of Envelope Class 30, on internal, external and tyre tread side).

Concerning the envelopes on both the tyre tread and the internal side, the manufacturer shall indicate, for each SGD type, the appropriate envelope class among those defined in Annex B. In this case, the Accredited Body shall verify that, for the affiliation class of the type, all the dimensions mentioned in Table B.1 are not exceeded.

4.1.5 Construction and materials

The SGDs shall be built:

— with appropriate materials, in order to resist to the usage requirements of different road surfaces;

— in a way that both snow and ice eventually caught inside the device will not affect its performance and safety requirements.

In addition, all the elements setting up a SGD:

— shall be articulated among one another in order to permit to the adaption of the SGD to the tyre deformation during the rolling process. The relative movement between the tyre and the SGD shall be guaranteed;

— shall not cause any damage to the tyre during normal use as a result of their conformation;

— those permitting, the correct fitting on the tyre tread shall be shaped in order to achieve a good grip on snow and ice without seriously impairing the behaviour of the vehicle;

— shall permit an increase of adherence both on the longitudinal axis (i.e: hill starting ability, braking) and on the lateral axis (i.e: road holding in a turn), so to guarantee the necessary safety level to the vehicle while driving on snowy or/and icy roads.

The samples SGD described in 3.6 shall have permanent connection between the tread element and the side/tensioning element.

The tyre tread parts shall be delivered as pre-assembled elements (e.g.: the elements shall not be provided as separated from one another).

Fine-adjustments of the elements is allowed. The adjustment procedure shall be indicated in the instruction manual.

4.1.6 Fitting

The SGDs shall be installable in such a way that they do not slip off during the use, and shall be installed on the tyre by following the indications contained in the use and maintenance booklet.

The functioning of the tensioning and/or fitting means shall be guaranteed in order to limit the dynamic lifting, and shall be effective in every condition of use.

In addition, the SGD shall not damage any part of the vehicle.

4.1.7 Driving speed

The maximum driving speed allowed while using a SGD is 50 km/h.

4.2 Wear Resistance

The SGD shall be submitted to a wear resistance test as described in 5.2.5.4.

4.3 Protection against environmental agents

The materials used to build the SGD shall not decrease their mechanical properties as a reaction to environmental agents during the lifetime of the product defined by the SGD manufacturer.

NOTE Environmental agents can include e.g. sand, salt, radiation, biological, chemicals, etc.

4.4 Dynamic liftting

The SGD shall be submitted to the dynamic lifting test described in 5.2.3.

4.5 General behavior on the road

The SGD shall be submitted to the tests described in 5.2.2.

Both during the performance test as well as when used as intended, the SGD shall not:

— cause any visible damage to the tyre or the vehicle;

— slip off the wheel.

4.6 Effectiveness during the use

Considering the high variability of the SGD use conditions (i.e.: power, type, weights distribution and wheel dimensions of the car, as well as weather and road conditions), the efficiency of the SGD shall be measured comparing the results of tests carried out with a reference SGD.

The characteristics of the reference SGD are written in Annex A.

4.7 Comparison test

The comparison tests shall be performed by mounting the SGD on the driven-axle.

A new SGD shall be submitted to the following comparison tests:

— test on ice-covered track (see 5.2.6);

— test on snow-covered track (see 5.2.7).

The new SGD shall be compared with the reference SGD.

The SGD shall be tested on both normal and snow tyres. The test should be run mounting the SGD on the normal tyres first.