



SLOVENSKI STANDARD

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Cestna vozila - Dodatne naprave za oprijem pnevmatik na osebnih in lahkih tovornih vozilih - 2. del: Posebni postopki testiranja

Road vehicles - Supplementary grip devices for tyres of passenger cars and light duty vehicles - Part 2: Specific test procedures

Straßenfahrzeuge - Zusätzliche Gleitschutzvorrichtungen für Reifen an Personenfahrzeugen und leichten Nutzfahrzeugen - Teil 2: Spezifische Prüfverfahren

Véhicules routiers - Dispositifs supplémentaires d'adhérence pour pneumatiques de véhicules particuliers et de véhicules utilitaires légers - Partie 2 : Procédures d'essai spécifiques

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ICS:

83.160.10 Pnevmatike za cestna vozila Road vehicle tyres

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Road vehicles - Supplementary grip devices for tyres of passenger cars and light duty vehicles - Part 2: Specific test procedures

Véhicules routiers - Dispositifs supplémentaires d'adhérence pour pneumatiques de véhicules particuliers et de véhicules utilitaires légers - Partie 2 : Procédures d'essai spécifiques

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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European foreword

This document (prEN 16662-2:2023) has been prepared by Technical Committee CEN/TC 301 “Road vehicles”, the secretariat of which is held by DIN.

This document is currently submitted to the CEN enquiry.

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prEN 16662-2:2023 (E)**1 Scope**

This document defines the specific test procedures for different type of SGDs: metallic, textile fabric, non-metallic net and hybrid.

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.

EN 16662-1:2020, *Road vehicles - Supplementary grip devices for tyres of passenger cars and light duty vehicles - Part 1: General safety and performance requirements*

EN ISO 13934-1, *Textiles - Tensile properties of fabrics - Part 1: Determination of maximum force and elongation at maximum force using the strip method (ISO 13934-1)*

EN ISO 12947-1, *Textiles - Determination of the abrasion resistance of fabrics by the Martindale method - Part 1: Martindale abrasion testing apparatus (ISO 12947-1)*

EN ISO 12947-2, *Textiles - Determination of the abrasion resistance of fabrics by the Martindale method - Part 2: Determination of specimen breakdown (ISO 12947-2)*

ISO 6507-1, *Metallic materials — Vickers hardness test — Part 1: Test method*

DIN 53863-1, *Testing of textiles — Abrasion test methods for textile planar fabrics — Principles*

DIN 53863-2, *Testing of textiles — Abrasion test methods for textile fabrics — Rotary abrasion test*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 16662-1:2020 apply.

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

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

4 General requirements

All the tests listed below shall be performed either on semi-finished components, or on material taken out of a final product in order to verify products taken from the market.

All data from internal tests of prEN 16662-2 shall be provided from the applicant to the testing body before applying tests according to EN 16662-1. All tests which are provided by the applicant shall be verified by the testing body.

All tests shall be carried out in suitable test laboratories and/or by technically trained personnel.

5 Requirements and specific test procedures for metallic SGDs**5.1 Corrosion protection**

The parts of the tread net shall be protected against corrosion by electro-galvanising with a minimum coat thickness of 5 µm, or by another method providing at least equivalent protection.

5.2 Strength

A tensile force of 4000 N shall be applied to the individual parts of the tread net and of 3300 N to all other individual parts transmitting tractive force.

The elements allowing the adherence to the tyre tread shall be arranged in the same condition as when the element is fitted on the tyre. In case of rhombus conformation (or similar), it shall be strained with an appropriate equipment provided with three retain points and, it shall have the angle shown in Figure 1 included between 70° to 130°. All the other elements of the road contact tread chain shall be submitted to the tensile strength test in coaxial position in relation to the traction axis of the test car.

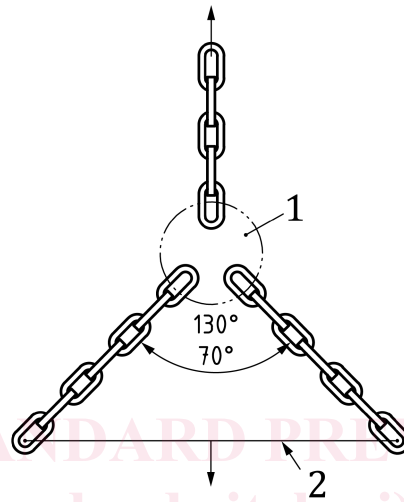


Figure 1 — Application of the forces

This stress may also be applied in a pulsed form in a drop test. The test pulse shall correspond to the pulse that is required for applying the required stress to the entirely metallic SGD.

Tread nets with plastic parts shall be tested in the temperature range from -15 °C to -18 °C.

All the elements shall resist, either without breaking or producing the detachment or the releasing of any part that would impair the efficiency of the parts of the chain.

5.3 Wear testing

The quality of the SGD's material is to be tested by reaching the following hardness values, according to ISO 6507-1:

- Core hardness: (400 ± 100) HV5;
- Surface hardness: (850 ± 100) HV5;
- Hardness depth: 0,05 d to 0,1 d (limit hardness: 550 HV1) where d is the thickness of the chain link wire.

6 Requirements and specific test procedures for textile fabric SGDs

6.1 Tread surface strength of the textile fabric SGD

6.1.1 General

The proof of the textile fabric SGD tread strength is to be provided according to EN ISO 13934-1, prescribing how to test the strength and the elongation on a dynamometer both in longitudinal and lateral direction.

The test shall be performed on the weakest part of the SGD tread surface. The weakest part of the SGD shall be proved by the manufacturer.

6.1.2 Tread surface strength of the textile fabric SGD

a) The test results shall meet the following requirements:

- Longitudinal direction: more than 1 800 N (36 N/mm),
- Lateral direction: more than 1 250 N (25 N/mm).

b) If it is not possible to prepare samples of 50 mm width according to EN ISO 13934-1, then the fabric in contact with the road can be tested as follows.

- In longitudinal direction:
 - o The test is carried out on a sample of 200 mm length between the jaws (mounting on jaws with gauge),
 - o The tread is tested on its total width,
 - o The sample shall be cauterized on the cut edges,
 - o The minimum resistance shall be more than 36 N/mm.
- In lateral direction:
 - o The test is carried out on a sample of 150 mm between the jaws (mounting on jaws with gauge) and 200 mm wide,
 - o The sample shall be cauterized on the cut edges,
 - o The minimum resistance shall be more than 25 N/mm.

6.2 Tread surface wear durability of the textile fabric SGD

6.2.1 General

Two globally recognized wear resistance tests in the textile world are the “Martindale test” and the “Frank/Hauser test”. Evidence of compliance with the minimum requirement criteria of the SGD tread surface material shall be provided using at least one of these two test procedures.

6.2.2 SGD tread surface wear durability performance requirements

a) Martindale test

This test is performed according to EN ISO 12947.

When using a P400 abrasive media with a pressure of 12 kPa, the sample shall hold 250 friction cycles before the first hole occurs.

b) Frank/Hauser test

This test is performed according to DIN 53863-1 and DIN 53863-2.

When applying a P400 abrasive media on a 100 cm² clamping area, 20 N output and 5 mm arched high, the sample shall not lose more than 80 g weight after 1500 friction cycles.

6.3 Corrosion resistance of the metal components of the textile fabric SGD

If some metal components are part of the textile fabric SGD, the test shall follow 5.1.

7 Requirements and specific test procedures for non-metallic net SGDs

7.1 Non-metallic net tread strength

7.1.1 General

The proof of the non-metallic net SGD tread strength is to be provided according to EN ISO 13934-1, prescribing how to test the strength and the elongation on a dynamometer both in longitudinal and lateral direction. The test shall be performed on the weakest part of the non-metallic net SGD tread.

The test shall be performed on the weakest part of the SGD tread surface. The weakest part of the SGD shall be proved by the manufacturer.

7.1.2 Tread strength of the non-metallic net SGD

The test results shall meet the following requirements:

- Longitudinal direction: **more than 4000 N**
- Lateral direction: **more than 4000 N**

LONGITUDINAL DIRECTION:

- The test is performed on the useful tread width of the non-metallic net SGD size adapted for the 205/55R16 reference tyre. The sample shall exclude the front and rear tensioning systems. The sample shall include the splice element used to close the non-metallic net SGD tread if it exists.
- The minimum resistance shall be more than 4 000 N on its total length.

LATERAL DIRECTION:

- The test is performed on a length which is equal to the useful tread width of the non-metallic net SGD size adapted for the 205/55R16 reference tyre. The sample shall exclude the front and rear tensioning systems. The sample shall exclude the splice element used to close the non-metallic net SGD tread if it exists.
- The minimum resistance shall be more than 4 000 N on its total length.

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7.2 Non-metallic net SGD tread wear durability

7.2.1 General

The test shall be done on a non-metallic net SGD tread sample. All metallic parts shall be removed.

The sample is a “X” shape (two longitudinal elements and their connection which defined the four strands of the X shape) with the correct dimension of a Martindale sample as defined by EN ISO 12947. The test is processed as shown in Figure 2, Figure 3 and Figure 4.

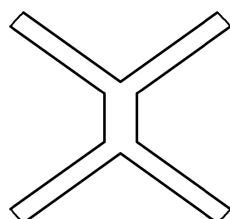
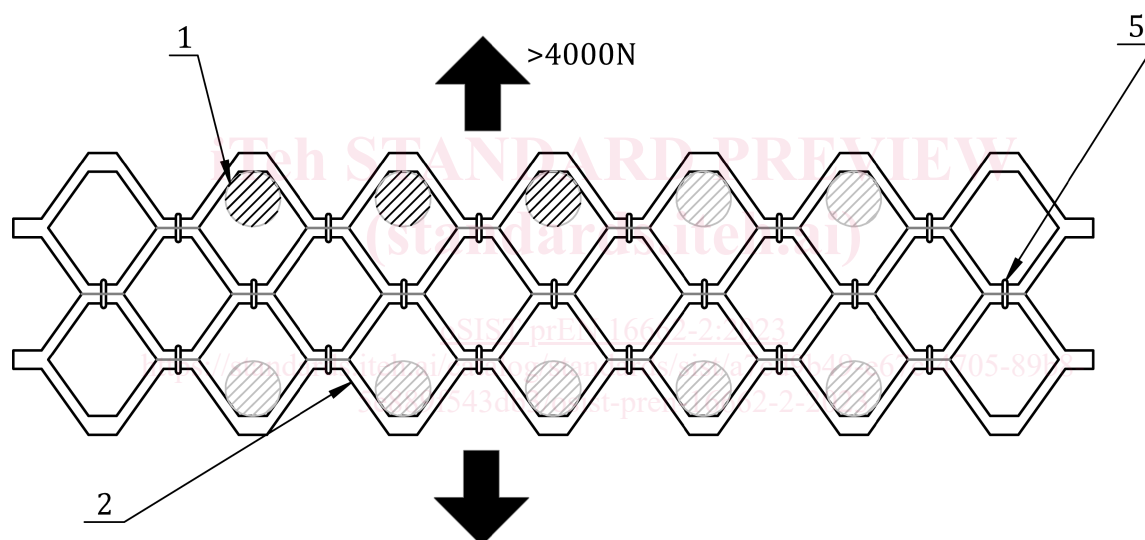


Figure 2 — Test method for lateral and longitudinal strength — Sample for Martindale test



Key

- 1 pulling tool pins
- 2 net
- 5 connections under loads

Figure 3 — Test method for lateral and longitudinal strength — Lateral strength