
**Gumirane ali plastificirane tekstilije - Varnost začasnih konstrukcij (šotori) -
Specifikacija tekstilij, namenjenih za šotore in podobne konstrukcije**

Rubber or plastic coated fabrics - Safety of temporary structures (tents) - Specification for coated fabrics intended for tents and related structures

Mit Kautschuk oder Kunststoff beschichtete Textilien - Sicherheit Fliegender Bauten (Zelte) - Spezifikation für beschichtete Textilien für Zelte und zugehörige Bauten

Supports textiles revêtus de caoutchouc ou de plastique - Sécurité des structures temporaires (tentes) - Spécification des supports textiles revêtus destinés aux tentes et structures similaires

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ICS:

59.080.40	Površinsko prevlečene tekstilije	Coated fabrics
97.200.30	Oprema za taborjenje in tabori	Camping equipment and camp-sites

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EUROPEAN STANDARD
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**Rubber or plastic coated fabrics - Safety of temporary structures
(tents) - Specification for coated fabrics intended for tents and
related structures**

Supports textiles revêtus de caoutchouc ou de plastique -
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beschichtete Textilien für Zelte und zugehörige Bauten

This European Standard was approved by CEN on 24 August 2008 and includes Amendment 1 approved by CEN on 23 February 2010.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN Management Centre has the same status as the official versions.

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

Management Centre: Avenue Marnix 17, B-1000 Brussels

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Foreword

This document (EN 15619:2008+A1:2010) has been prepared by Technical Committee CEN/TC 248 "Textiles and textile products", the secretariat of which is held by BSI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by October 2010, and conflicting national standards shall be withdrawn at the latest by October 2010.

This document supersedes EN 15619:2008.

This document includes Amendment 1, approved by CEN on 2010-02-23.

The start and finish of text introduced or altered by amendment is indicated in the text by tags **A1** and **A1**.

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EN 15619:2008+A1:2010 (E)**Introduction**

The purpose of this European Standard is to specify the characteristics, the requirements and the test methods for coated fabrics intended for temporary structure and tents.

Particular care has been taken not to come in conflict with the items that have already been treated in EN 13782. This European Standard has been drawn up according to past experience and risk analysis. The content of this European Standard collects the different existing national regulations and refers to the different European test standards available for coated fabrics.

This European Standard also introduces a system of levels. It is not possible to divide coated fabric for tents into just a few performance levels, because of the enormous variety of conditions of use. This European Standard proposes different level of performance (A, B, C) for each characteristic – or T1, T2, T3, T4 for the fire behaviour. This allows to choose the appropriate level for each characteristic and so to compose a "product profile", adapted to each specific type of use. This means that for small tents exposed to low wind and snow loads but high exposition to sun light, a mechanical resistance level C may be required combined with a colour fastness level A. The level system should absolutely not be interpreted as if a coated fabric for tents needs to be rated "A" for all properties in order to obtain a "class" A.

This European standard specifies requirements which are useful at design, calculation, manufacture, installation, maintenance, operation, examination and testing of coated fabric.

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1 Scope

This European Standard specifies the characteristics, requirements and test methods for coated fabric intended for mobile, temporary installed tents (see 3.3) and related structures.

Plastic film and material other than coated fabrics are not covered by this European Standard.

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.

EN 1875-3, *Rubber- or plastics- coated fabrics — Determination of tear strength — Part 3: Trapezoidal method*

EN 12280-1, *Rubber- or plastics- coated fabrics — Accelerated ageing tests — Part 1: Heat ageing*

EN 13782, *Temporary structures — Tents — Safety*

EN 14115, *Textiles — Burning behaviour of materials for marquees, large tents and related products — Ease of ignition*

EN 20105-A02, *Textiles — Tests for colour fastness — Part A02: Grey scale for assessing change in colour (ISO 105-A02:1993)*

EN ISO 846, *Plastics — Evaluation of the action of microorganisms (ISO 846:1997)*

EN ISO 1421, *Rubber- or plastics-coated fabrics — Determination of tensile strength and elongation at break (ISO 1421:1998)*

EN ISO 2231, *Rubber- or plastics-coated fabrics — Standard atmospheres for conditioning and testing (ISO 2231:1989)*

EN ISO 2286-2, *Rubber- or plastics-coated fabrics — Determination of roll characteristics — Part 2: Methods for determination of total mass per unit area, mass per unit area of coating and mass per unit area of substrate (ISO 2286-2:1998)*

EN ISO 2411, *Rubber- or plastics-coated fabrics — Determination of coating adhesion (ISO 2411:2000)*

EN ISO 4892-3, *Plastics — Methods of exposure to laboratory light sources — Part 3: Fluorescent UV lamps (ISO 4892-3:2006)*

EN ISO 11925-2:2002, *Reaction to fire tests — Ignitability of building products subjected to direct impingement of flame — Part 2: Single-flame source test (ISO 11925-2:2002)*

ISO 1420, *Rubber- or plastics-coated fabrics — Determination of resistance to penetration by water*

3 Terms and definitions

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

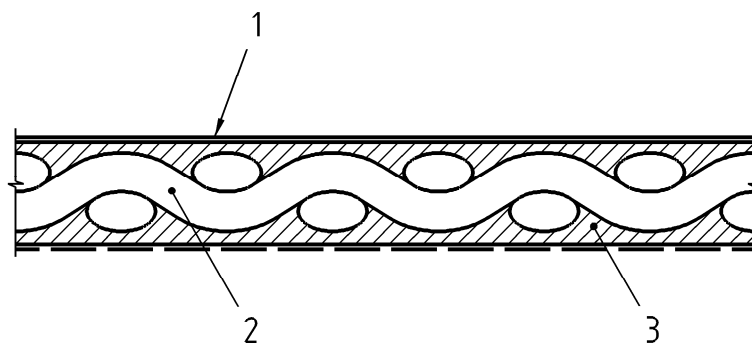
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- 3.1 initial approval**
design and calculation review, verification, examinations and tests executed before granting a permit for tent operation
- 3.2 membrane joint**
junction of two coated fabric membrane surfaces executed by a sewn, welded, glued or clamped connection
- 3.3 tent**
mobile, temporary installed structure enclosure or open building, i.e.: marquee, hangar, tent-hall, booth, excluding camping tents
- 3.4 surface top coating**
additional protection of the surface of coated fabric against soiling and discolouration
- 3.5 product family**
total range of products within specific variability limits (defined by the manufacturer or a technical specification) of the product parameters and, if appropriate, of the final use parameters for which the specified characteristics do not change (do not deteriorate) – i.e. the test results obtained from any one product within the family are valid for all other products within the family

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4 General description of coated fabrics intended for tents

The yarns are in most cases woven into fabrics. Coatings on one or both sides guarantee the integrity, contribute to the protection of the fabric against mechanical damage, atmospheric influence, and also against damage caused by animals, plant, and chemical agents. Coatings may be covered by a top coating providing additional protection of the surface against soiling and discoloration.

**Key**

- 1 top coating
- 2 fabric
- 3 coating

Figure 1 — Schema of a cross section of a woven fabric coated on both sides

5 Characteristics relating to coated fabrics

5.1 Mass per unit area

The mass per unit area of the coated fabric shall be measured in accordance with EN ISO 2286-2.

5.2 Tensile mechanical behaviour

Tensile strength shall be measured according to EN ISO 1421. Tensile properties measured by means of EN ISO 1421 monoaxial tensile test in warp and weft direction are most of the time sufficient for design. However, if more accurate data are required for design, complementary biaxial tests simulating real load conditions may be carried out on the membrane.

5.3 Tear strength

In order to assess the risk of propagation of a tear due to lack of quality of the coated fabric or to an accident, the tear strength performances of a coated fabric shall be measured according to EN 1875-3 and declared by the manufacturer.

5.4 Coating adhesion

The adhesion between the base fabric and the coating layer of the membrane material shall be assumed by coating adhesion tests according to Annex B.

5.5 Dimensional stability

During its life the tent membrane made up of coated fabric is submitted to many environmental loads (wind, snow, rain) and many mounting and dismantling of the structure. In order to limit any dimensional change of the membrane panels during the life of the tent, the fabric shall be dimensionally stable. The dimensional stability of the fabric shall be measured in both directions according to the test method described in C.1.

For tents exposed to elevated temperatures during their use, an optional test is proposed in Annex C including a heat exposure (C.2) before mechanical loading.

5.6 Colour fastness to weathering and light

The samples are exposed according to Annex A. Colour fastness is assessed by comparison with the grey scale and the specimens exposed for 2000 h to artificial ageing and the non-exposed specimens. The ageing procedure detailed in Annex A is based on EN ISO 4892-3 exposure mode 1 (UV, moisture cycle, and elevated temperature) that simulate the outdoor natural ageing.

5.7 Susceptibility to the development of microorganisms

In some climatic and environmental conditions, microorganisms may fix and develop on the surface of the coating. Their presence may damage the coating layer itself (discoloration, degradation of plastic coating) and may also hinder the use of the coated fabric membrane. The manufacturer of the coated fabric shall ensure that the coated fabric is treated with adapted treatment or sufficiently resistant to the action of microorganisms according to EN ISO 846.

5.8 Appearance

Inspection of the appearance of membrane is important not only from an aesthetic point of view, but also from the aspect of examining for the presence of defects causing structural problems and of obstructions during usage. Appearance should be visually inspected on microscopic images taken under appropriate lighting at x

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50 or x100 magnification. Microscopic images of two or more cross-sections and surfaces should be taken so that the cross-sectional and surface characteristics of the fabrics are checked.

The inspection items include:

- a) thickness of protective coating on the surface of yarns;
- b) defects on yarns and their arrangement;
- c) cracking of the coating and adherence of dirt, stains and foreign matter;
- d) other defects which may cause obstruction in usage.

Inspection of those items shall be carried out according to sampling plans of a single lot of membrane material. Judgement criteria for the inspection items are determined in accordance with the usage and grade of membrane materials.

5.9 Reaction to fire**5.9.1 General**

In order to protect peoples against the risk of full development of fire, the coated fabrics used for tent or related structures shall have an appropriate reaction to fire behaviour. For this purpose, the coated fabrics shall be tested according to EN 14115.

A1 *deleted text* **A1**

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The coated fabrics used for tent covering, walls, textile decorations and related applications inside tents shall be classified in accordance with the following classification system.

[SIST EN 15619:2009+A1:2011](https://standards.iteh.ai/catalog/standards/sist/en-15619-2009-a1-2011)

Materials shall be classified in 4 categories (T1, T2, T3, or T4) or declared "Non classified".

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5.9.2 Level T1

During the test, **A1** afterflame times shall not exceed 5 s in any of the specimens tested **A1**; any **A1** glowing **A1** propagation effect **A1** *deleted text* **A1** shall not exceed 25 cm from the lower edge of the specimen. If there is any fall of droplets or particles which continue to burn after being in contact with the floor of the apparatus, the material is classified T4. If burning droplets or particles do not burn after being in contact with the floor, they are not taken into account.

A1 Material with a duration of flaming not exceeding 5 s and that opens and does not allow any contact with the pilot flame, shall be subjected and pass the complementary test according to EN ISO 11925-2 with the following testing parameters:

- flame application: on the surface and at the bottom edge;
- time of the flame application: 30 s;
- requirement: the top of the flame shall not reach 150 mm from the application point of the flame before 60 s. In case of failure, the material shall be declared "Non classified". **A1**

5.9.3 Level T2

The material is classified T2 if the following conditions are fulfilled:

- the material is not classified T1;

- the average value of the maximum length of the destroyed area from the lower edge of the test specimen is lower than 350 mm.

If there is any fall of droplets or particles which continue to burn after being in contact with the floor of the apparatus, the material is classified T4. If burning droplets or particles do not burn after being in contact with the floor, they are not taken into account.

A1 *deleted text* A1

5.9.4 Level T3

The material is classified T3 if following conditions are fulfilled:

- the material is classified neither T1 nor T2;
- the average value of the maximum length of the destroyed area from the lower edge of the test specimen is higher than 350 mm and lower than 600 mm;
- the average value of the maximum width of the destroyed area, covering that part of the test specimen between 450 mm and 600 mm from its lower edge, is lower than 90 mm.

If there is any fall of droplets or particles which continue to burn after being in contact with the floor of the apparatus, the material is classified T4. If burning droplets or particles do not burn after being in contact with the floor, they are not taken into account.

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5.9.5 Level T4

A material is classified T4 when it meet the requirements of level T1, T2, or T3 but falls of droplets or particles which continue to burn after being in contact with the floor of the apparatus are observed during the test.

[SIST EN 15619:2009+A1:2011](https://standards.iteh.ai/catalog/standards/sist/ce931fc5-bb94-41bb-a8cb-9bfd4a1e2846/sist-en-15619-2009a1-2011)

5.9.6 Non classified materials

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If material doesn't meet the requirements of T1, T2, T3 or T4 level, this material is declared "non classified" (N.C.). A material that has not been tested according to EN 14115 by an independent and accredited laboratory is also declared "non classified" (N.C.).

6 Requirements

This standard proposes different levels of performance (level A, B, C) for each characteristic. This allows to choose the appropriate level for each characteristic and so to compose a "product profile", adapted to each specific type of use. This means that low mechanical resistance may be combined with e.g. high colour fastness. The level system should absolutely not be interpreted as if a coated fabric for tents needs to be rated "A" for all properties in order to obtain a "class" A.

To ensure safe and durable performance, each characteristic of the tent covering membranes made up of coated fabric shall comply with the value and class declared by the manufacturer of the coated fabric accordance with the requirements of Table 1, Table 2 and, if required, Table 3.