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**Sports and recreational equipment —  
Fabrics for awnings — Specification**

*Matériel de sports et d'activités de plein air — Tissus pour auvents —  
Spécifications*

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 10966 was prepared by Technical Committee ISO/TC 83, *Sports and recreational equipment*, Subcommittee SC 2, *Camping tents*.

This third edition, together with ISO 5912:2011, cancels and replaces the second edition (ISO 10966:2005), which has been technically revised to incorporate the following changes:

- requirements for camping tents have been deleted and are now incorporated in ISO 5912:2011 with revised values;
- an introduction has been added.

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## Introduction

This International Standard previously included requirements for fabrics for awnings and camping tents. With the revision of the second edition of this International Standard, the requirements for fabrics for camping tents have been deleted from this International Standard and are now incorporated in ISO 5912:2011 with revised values.

The requirements for textile fabrics for awnings as given in this International Standard will be reviewed in line with market needs. The intention is to incorporate the reviewed requirements in the next edition of ISO 8936. This International Standard will then be withdrawn as all its requirements will then have been incorporated in ISO 5912 (for camping tents) and ISO 8936 (for awnings).

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# Sports and recreational equipment — Fabrics for awnings — Specification

## 1 Scope

This International Standard specifies the most important material characteristics for woven fabrics for awnings. It can also be applied to other types of fabrics.

To meet the needs arising from different climatic conditions, different national habits in tent usage or different durability expectations of the customer, the material requirements are split into two levels: A and B.

Level A requirements apply to awning fabrics intended for use where severe strain is caused by wind, weather or long-term use.

Level B requirements are lower than level A and apply to awning fabrics intended for less severe use.

NOTE This International Standard follows the awning classification given in ISO 8936:

- type W: winter awning;
- type R: residential awning;
- type T: touring awning.

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## 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.

ISO 105-B02, *Textiles — Tests for colour fastness — Part B02: Colour fastness to artificial light: Xenon arc fading lamp test*

ISO 105-B04, *Textiles — Tests for colour fastness — Part B04: Colour fastness to artificial weathering: Xenon arc fading lamp test*

ISO 105-E01, *Textiles — Tests for colour fastness — Part E01: Colour fastness to water*

ISO 105-X12, *Textiles — Tests for colour fastness — Part X12: Colour fastness to rubbing*

ISO 811, *Textile fabrics — Determination of resistance to water penetration — Hydrostatic pressure test*

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

ISO 1421, *Rubber- or plastics-coated fabrics — Determination of tensile strength and elongation at break*

ISO 4675:1990, *Rubber- or plastics-coated fabrics — Low-temperature bend test*

ISO 4892-2, *Plastics — Methods of exposure to laboratory light sources — Part 2: Xenon-arc lamps*

ISO 6940, *Textile fabrics — Burning behaviour — Determination of ease of ignition of vertically oriented specimens*

ISO 7152, *Camping tents and caravan awnings — Vocabulary and list of equivalent terms*

ISO 7771, *Textiles — Determination of dimensional changes of fabrics induced by cold-water immersion*

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

ISO 13937-1, *Textiles — Tear properties of fabrics — Part 1: Determination of tear force using ballistic pendulum method (Elmendorf)*

### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 7152 and the following apply.

#### 3.1

**outer fabric**

fabric for awnings which is directly exposed to weather influences in practical use

#### 3.2

**inner fabric**

fabric for awnings which is not directly exposed to weather influences in practical use

#### 3.3

**coated fabric**

material treated with film-generating substances in order to permanently close the gaps between yarns or fibres, thereby increasing the resistance to penetration by water

### 4 Minimum requirements and test methods

#### 4.1 General

The minimum requirements and test methods are specified in 4.2 to 4.8.

Manufacturers of products complying with this International Standard should consider the health and protection of the user, the environment and the supply chain. Materials used should not, during foreseeable conditions of normal use, release or degrade to release substances generally known to be hazardous and shall comply with national legislation for such substances.

#### 4.2 Coated fabric roofs for awning types R and T

**Table 1 — Minimum requirements for coated roofs**

Property	Level A Type <sup>a</sup>		Level B Type <sup>a</sup>		Direction	Test method
	R	T	R	T		
Breaking strength (N)	1 200	1 000	1 000	850	warp and weft	ISO 1421
Tear resistance (N)	15	15	12	12	warp and weft	ISO 13937-1
Resistance to penetration by water (Pa)	15 000	15 000	8 000	8 000	—	ISO 1420

<sup>a</sup> For type W see 4.6.

#### 4.3 Uncoated fabric roofs for awning types R and T

Table 2 — Minimum requirements for uncoated roofs

Property	Level A Type <sup>a</sup>		Level B Type <sup>a</sup>		Direction	Test method
	R	T	R	T		
Breaking strength (N)	— <sup>b</sup>	850	700	700	warp and weft	ISO 13934-1
Tear resistance (N)	— <sup>b</sup>	15	15	15	warp and weft	ISO 13937-1
Resistance to penetration by water (Pa)	— <sup>b</sup>	5 000	4 000	3 000	—	ISO 811
<sup>a</sup> For type W see 4.6.						
<sup>b</sup> Uncoated fabrics for roofs of awnings type R are not suitable for this application.						

#### 4.4 Coated fabric walls for awning types R and T

Table 3 — Minimum requirements for coated walls

Property	Level A Type <sup>a</sup>		Level B Type <sup>a</sup>		Direction	Test method
	R	T	R	T		
Breaking strength (N)	1 000	1 000	850	800	warp and weft	ISO 1421
Tear resistance (N)	12	12	10	10	warp and weft	ISO 13937-1
Resistance to penetration by water (Pa)	10 000	15 000	4 000	4 000	—	ISO 1420
<sup>a</sup> For type W see 4.6. <a href="https://standards.iteh.ai/catalog/standards/sist/489df6ca-8a78-4791-8ff6-8ff2e54cf612/iso-10966-2011">https://standards.iteh.ai/catalog/standards/sist/489df6ca-8a78-4791-8ff6-8ff2e54cf612/iso-10966-2011</a>						

#### 4.5 Uncoated fabric walls for awning types R and T

Table 4 — Minimum requirements for uncoated walls

Property	Level A Type <sup>a</sup>		Level B Type <sup>a</sup>		Direction	Test method
	R	T	R	T		
Breaking strength (N)	650	600	600	500	warp and weft	ISO 13934-1
Tear resistance (N)	18	18	16	16	warp and weft	ISO 13937-1
Resistance to penetration by water (Pa)	2 500	2 500	2 500	2 000	—	ISO 811
<sup>a</sup> For type W see 4.6.						

#### 4.6 Roofs and walls for awning type W

Table 5 — Minimum requirements for roofs and walls

Property	Roofs		Walls		Direction	Test method
	Level A	Level B	Level A	Level B		
Breaking strength (N)	1 200	1 000	1 000	850	warp and weft	ISO 1421 (coated fabrics) ISO 13934-1 (uncoated fabrics)
Tear resistance (N)	40	30	30	20	warp and weft	ISO 13937-1
Resistance to penetration by water (Pa)	15 000	8 000	15 000	4 000	—	ISO 1420 (coated fabrics) ISO 811 (uncoated fabrics)

#### 4.7 Resistance against cold crack

When tested in accordance with ISO 4675 for all coated fabrics, only cracks of grade A as specified in ISO 4675:1990, 9.1 are allowed. The test temperature shall be  $-20\text{ °C}$  for snow awning (type W) and  $-10\text{ °C}$  for materials of all other types of awnings.

#### 4.8 Dimensional stability

When tested in accordance with ISO 7771 using a cycle of 2 h, the dimensional change shall not exceed  $\pm 3\%$ .

#### 4.9 Colour fastness

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The fabrics shall exhibit the following minimum colour fastness ratings.

##### a) Outer fabrics for all types of awnings:

- fastness to light 5 (when tested in accordance with ISO 105-B02);
- fastness to weathering 4 to 5 (when tested in accordance with ISO 105-B04);
- fastness to water 4 (when tested in accordance with ISO 105-E01);
- fastness to wet rubbing 3 (when tested in accordance with ISO 105-X12).

##### b) Inner fabrics:

- fastness to water 4 (when tested in accordance with ISO 105-E01);
- fastness to wet rubbing 3 (when tested in accordance with ISO 105-X12).

#### 4.10 Breaking strength of inner fabrics

Inner fabrics for all types of awnings shall have a minimum breaking strength of 300 N for warp and weft when tested in accordance with ISO 13934-1 or ISO 1421.

#### 4.11 Weatherability

All outer fabrics (roof, wall, etc.) shall provide a minimum resistance to natural sunlight regardless of the type of awning to which they belong. This requirement is deemed to be met if, after artificial weathering in accordance with ISO 4892-2 and applying the test parameters specified in Table 6, the breaking strength and the resistance



to penetration by rain are not more than 30 % below the minimum value applicable to the type and part of the awning specified in Tables 1 to 5.

**Table 6 — Test parameters for ISO 4892-2**

Parameter	Requirement
Time of exposure	180 h
Light source	Xenon arc lamp (global radiation)
Black panel temperature	(55 ± 3) °C
Relative humidity	(65 ± 5) %
Spraying/drying cycle	18 min/102 min
Dimension of specimen	Compatible with the apparatus and the test specimens for breaking strength and resistance to penetration by water
Number of specimens	At least three
Expression of results	Mean value of three trials

#### 4.12 Flammability

This International Standard does not specify a general minimum requirement concerning flame retardation of fabrics for awnings. If the fabric of an awning is claimed to have flame retardant properties, there shall be no sustained combustion when tested in accordance with ISO 6940 and exposed to a test flame for 10 s (tests shall be carried out on the fabric when new and after artificial weathering according to ISO 4892-2).

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#### 5 Marking

All fabrics which are claimed to comply with the requirements of this International Standard shall be marked with the number and date of this International Standard, i.e. ISO 10966:2011, and may be labelled as having flame retardant properties in accordance with the requirements of 4.12 of ISO 10966:2011.