INTERNATIONAL STANDARD

ISO 23537-2

Second edition
2023-08

Requirements for sleeping bags —

Part 2: Fabric and material properties

Exigences pour les sacs de couchage —

Partie 2: Propriétés de l'étoffe et des matières

Reference number
ISO 23537-2:2023(E)

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Published in Switzerland

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Foreword

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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 document 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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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 83, *Sports and other recreational facilities and equipment,* in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 136, *Sports, playground and other recreational facilities and equipment,* in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This second edition cancels and replaces the first edition (ISO 23537-2:2016), which has been technically revised.

The main changes are as follows:

— the requirement for colour fastness has been clarified to avoid misunderstanding (see 4.1.3.3);

— normative references have been updated (see Clause 2).

A list of all parts in the ISO 23537 series can be found on the ISO website.

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 ISO 23537 series consists of two parts, which allows for separate validation of thermal properties and product and material performance. This separation of parts also allows for continued development of new product combinations as it encourages manufacturers to consider new combinations of materials which, for example, are not suitable to be tested by traditional textile physical tests, but which can still have thermal properties evaluated.

This document considers important aspects concerning the physical and performance properties of the sleeping bag. Thermal and dimensional requirements are specified in ISO 23537-1.

NOTE No prediction model exists for the determination of the limit temperatures based on the thermal resistance of the sleeping bag for children and babies. Moreover, such a model for testing cannot be developed because the necessary controlled sleep trials with children or babies in climatic chambers are, out of ethical reasons, not possible.

Requirements for sleeping bags —

Part 2:
Fabric and material properties

1 Scope

This document specifies the fabric and material properties as well as provisions for labelling of adult sized sleeping bags for use in sports and leisure time activities.

This document does not apply to sleeping bags intended for specific purposes such as military use and extreme climate zone expedition. It does not apply to sleeping bags for children or babies.

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 105-A03, *Textiles — Tests for colour fastness — Part A03: Grey scale for assessing staining*

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

ISO 105-C06, *Textiles — Tests for colour fastness — Part C06: Colour fastness to domestic and commercial laundering*

ISO 105-E04, *Textiles — Tests for colour fastness — Part E04: Colour fastness to perspiration*

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

ISO 139, *Textiles — Standard atmospheres for conditioning and testing*

ISO 3758, *Textiles — Care labelling code using symbols*

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

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

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

EN 12130, *Feather and down — Test methods — Determination of the filling power (massic volume)*

EN 12132-1, *Feather and down — Methods of testing the down proof properties of fabrics — Part 1: Rubbing test*

EN 12934, *Feather and down — Composition labelling of processed feathers and down for use as sole filling material*

EN 12935, *Feather and down — Hygiene and cleanliness requirements*

EN 13088, *Manufactured articles filled with feather and down — Method for the determination of a filled product's total mass and for the determination of the mass of the filling*

EN 13538-3, *Determination of dimensional characteristics of sleeping bags — Part 3: Volume under load and easiness of packing*

EN 15586, *Textiles — Methods of testing the fibre proof properties of fabrics: Rubbing test*

EN 29073-1, *Textiles — Test method for nonwovens — Part 1: Determination of mass per unit area*

3 Terms and definitions

No terms and definitions are listed in this document.

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

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

— IEC Electropedia: available at https://www.electropedia.org/

4 Requirements and test methods

4.1 Fabrics

4.1.1 Down proofness

The fabric/fabric combinations of the shell or lining of the sleeping bag shall be tested in accordance with EN 12132-1.

The number of feather and/or down fibres counted shall not exceed 10 for each fabric/fabric combination as described in EN 12132-1.

4.1.2 Synthetic fibre proofness

The synthetic fibre proofness shall be tested in accordance with EN 15586.

The number of synthetic fibres protruded through the shell or lining of the sleeping bags shall be ≤ 30 for each cushion.

4.1.3 Mechanical properties

4.1.3.1 Abrasion

The abrasion resistance of the fabric shall be tested in accordance with ISO 12947-1 and ISO 12947-2. The shell of sleeping bags shall withstand ≥ 20 000 test cycles.

4.1.3.2 Tear force

The tear properties of the fabric shall be tested in accordance with ISO 13937-1. The tear force of shell and lining fabrics shall be ≥ 10 N.

4.1.3.3 Colour fastness

The colour fastness of the shell and lining shall be tested as follows.

a) The colour fastness to wet and dry rubbing shall be tested in accordance with ISO 105-X12. The staining shall be of a fastness grade ≥ (3-4) in accordance with ISO 105-A03.

b) The colour fastness to washing shall be tested in accordance with ISO 105-C06 at care label temperature. The staining and change of colour shall be of a fastness grade ≥ 4 in accordance with ISO 105-A03.

c) The colour fastness to perspiration shall be tested in accordance with ISO 105-E04. The staining and change of colour shall be of a fastness grade ≥ (3-4) in accordance with ISO 105-A03.

d) The colour fastness to light shall be tested in accordance with ISO 105-B02. The change of colour shall be of a fastness grade ≥ (4-5) in accordance with ISO 105-B02.

4.2 Filling material

4.2.1 Feather and/or down

4.2.1.1 Composition

The composition of the filling material shall be determined in accordance with EN 12934.

4.2.1.2 Hygienic state

The filling material shall conform to the requirements in EN 12935.

4.2.1.3 Filling power

The filling power shall be tested in accordance with EN 12130.

The deviation of the filling power from the declared nominal value shall be ≤ 5 %.

4.2.1.4 Filling material mass

The filling material mass, in g, shall be measured according to EN 13088.

The deviation of the filling material mass from the declared nominal value shall be ≤ 7 %.

4.2.2 Filling material other than feather and/or down – Mass per unit area

The mass per unit area, in g/m^2, shall be measured in accordance with EN 29073-1.

The deviation of the mass per unit area from the declared nominal value shall be ≤ 7 %.

4.3 Finished articles

4.3.1 Inside dimensions

4.3.1.1 Inside length

To enable labelling of the sleeping bag, the inside length of the sleeping bag shall be measured within ±3 cm. The measurement is made by turning the sleeping bag inside out and measuring the length from the position of the seam where the heel of the foot is placed to the top of the sleeping bag (excluding any vertical components of the hood), without applying any force to extend the sleeping bag length.

4.3.1.2 Maximum inside width

To enable labelling of the sleeping bag, the maximum inside width shall be measured within ±2 cm. The measurement is made by turning the sleeping bag inside out and measuring the circumference at the widest point without stretching the fabric. If the maximum inside width of the sleeping bag is not in the chest area, then the position of the widest point of the sleeping bag shall be indicated on the label. The circumference is halved to provide the width of the sleeping bag. If the sleeping bag has elastic seams, a force of (10 ± 1) N may be used to extend these seams prior to measurement, for instance by using a spring balance.

4.3.1.3 Inside foot width

To enable labelling of the sleeping bag, the foot width shall be measured within ±2 cm. The measurement is made by turning the sleeping bag inside out and measuring the circumference at a distance of (30 ± 1) cm towards the hood from the position where the heel of the foot is placed. The circumference is halved to provide the width of the sleeping bag. If the sleeping bag has elastic seams, a force of (10 ± 1) N may be used to extend these seams prior to measurement, for instance by using a spring balance.

4.3.2 Total mass

The total mass of sleeping bags filled with feather and/or down shall be determined in accordance with EN 13088.

For sleeping bags filled with materials other than feather and down, samples shall be conditioned in accordance with ISO 139 at 20 °C air temperature and 65 % relative air humidity; and the mass of the sleeping bag (without stuff sack) shall be determined. The deviation of the total mass from the declared nominal value shall be ≤ 7 %.

4.3.3 Volume under load

The volume of the sleeping bag shall be determined in accordance with EN 13538-3.

The deviation of the volume from the declared nominal value shall be ≤ 5 %.

5 Test report

The test report shall include at least the following:

a) reference and description of the sleeping bag sample;

b) reference to this document, i.e. ISO 23537-2;

c) details of deviations from this document, if applicable;

d) date of test.

6 Marking

At least the following information shall be permanently attached to the sleeping bag (e.g. by printing on the sleeping bag or by sewn-in labels):

a) reference to this document, i.e. ISO 23537-2;

b) composition of the filling, shell fabric and lining;

c) care labelling, in accordance with ISO 3758;

d) name of the brand;

e) name or reference number of the product.

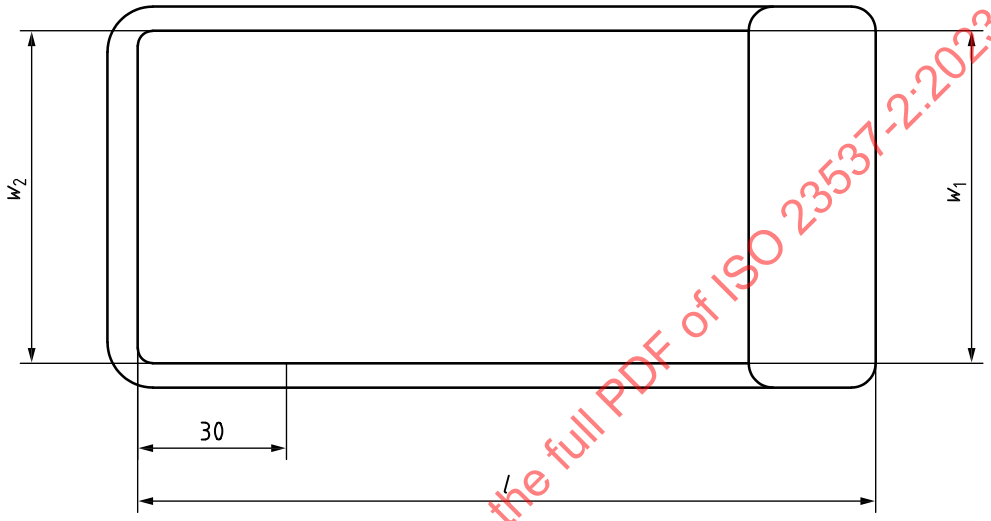
7 Information supplied to the consumer

7.1 Mandatory information

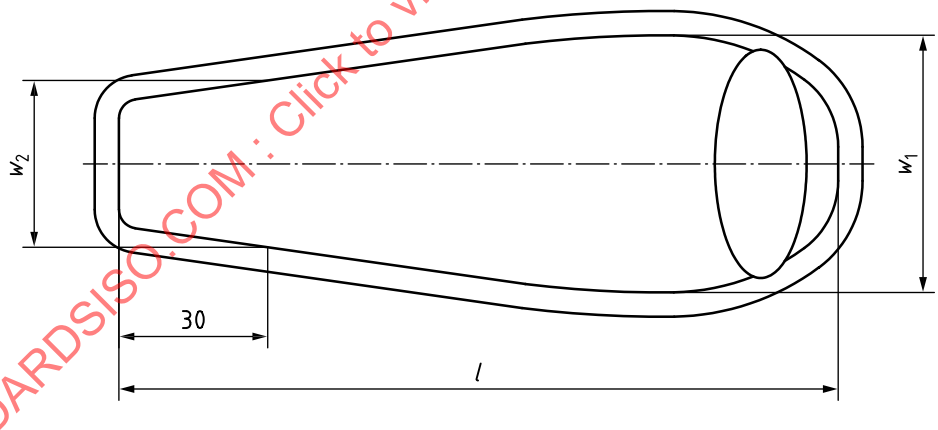
At least the following information shall be supplied to the consumer together with the sleeping bag at the point of sale:

a) inside length, maximum inside width and foot width in centimetres in a graphic (for an example, see Figure 1);

Dimensions in centimetres



a) Rectangular sleeping bag



b) Mummy shaped sleeping bag

Key

l inside length

w_1 maximum inside width

w_2 inside foot width

Figure 1 — Graphics for sleeping bag labels

b) total mass of the sleeping bag:

1) for sleeping bags of < 1 000 g rounded to the nearest 10 g;