

Requirements for sleeping bags

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EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

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English Version

Requirements for sleeping bags

Exigences pour les sacs de couchage

Anforderungen an Schlafsäcke

This European Standard was approved by CEN on 27 April 2012.

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Foreword

This document (EN 13537:2012) has been prepared by Technical Committee CEN/TC 136 "Sports, playground and other recreational facilities and equipment", the secretariat of which is held by DIN.

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of an identical text or by endorsement, at the latest by November 2012, and conflicting national standards shall be withdrawn at the latest by November 2012.

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

This document supersedes EN 13537:2002.

In comparison with EN 13537:2002, the following changes have been made:

- a) the calibration of thermal manikins for the measurement of thermal insulation of a sleeping bag has been introduced following the results of an extensive round robin test between 6 laboratories using a reference set of sleeping bags. This has improved the precision and reproducibility of the test results;
- b) the test procedure of the thermal resistance measurement of the sleeping bag with the thermal manikin has been specified in more detail, improving the reproducibility of the test results;
- c) a pre-treatment has been introduced for the thermal property tests for the sleeping bag;
- d) measurement of the inside dimensions of sleeping bags has been included. It was formally specified in EN 13538-1 which has been withdrawn;
- e) the thickness and elastic recovery of the sleeping bag, as determined by EN 13538-2, has been deleted from the requirements;
- f) the easiness of packaging of the sleeping bag, as determined by EN 13538-3, has been deleted from the requirements;
- g) based on new research, the extreme temperature limits in Table 1 have been recalculated and amended.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to announce this Technical Specification: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Introduction

This European Standard has been substantially revised. The objectives of the revision were to simplify the standard by deleting requirements and test methods which had not been proven to be sufficiently reproducible or which did not contribute to the safety and quality performance of sleeping bags. The revision was also conducted in order to improve the inter-laboratory variability and repeatability of the test method for determination of the thermal properties of a sleeping bag.

Since the last edition of this European Standard, products in the market have evolved to reflect the changing needs of the user. It was the intention of the committee during this revision that the standard would reflect these continuous and changing needs and not become restrictive in respect of future technology and advances in the manufacturing industry.

In buying a sleeping bag, the consumer expects (along with other aspects such as functional design, good fit, low weight and volume and durability), information regarding which temperature range the sleeping bag can be used. This temperature range serves to prevent the person in the bag feeling too cold on the one hand or too hot, combined with unpleasant sweating, on the other. The primary aim of this European Standard is to provide this information to the consumer by specifying a test procedure and an evaluation model to quantify the thermophysiological function of sleeping bags (see also Annex E).

An inter-laboratory test, involving six different laboratories, was organised within the present CEN working group on a set of six sleeping bags filled with feathers and downs and synthetics. Six human shaped thermal manikins were used, consisting of 6 to 35 independent segments and corresponding to the requirements for testing protective clothing against cold.

The test showed the following conclusions:

- even with multi-sectional manikins, the design and especially the number of independent sections can influence the value of thermal resistance by up to 20 %;
- yet the test results of thermal resistance with all manikins showed a maximum difference of 10 % (leading e.g. to a difference in T_{lim} of 3,0 °C for a sleeping bag with $T_{lim} = 0$ °C);
- the weight of the manikin did not significantly effect the test results.

1 Scope

This European Standard specifies the requirements and test methods as well as provisions for labelling of adult sized sleeping bags for use in sports and leisure time activities.

This European Standard does not apply to sleeping bags intended for specific purpose such as military use and extreme climate zone expedition. It does not apply to sleeping bags for children or babies: no prediction model exists for the determination of the limiting temperatures based on the thermal resistance of the sleeping bag for these demographics. 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 permitted.

This European Standard describes the method for the assessment of the performance in steady state conditions of a sleeping bag with regard to the protection against cold.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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 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 methods for nonwovens — Part 1: Determination of mass per unit area*

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

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

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

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

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

EN ISO 3758, *Textiles — Care labelling code using symbols (ISO 3758)*

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)*

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

EN ISO 15831, *Clothing — Physiological effects — Measurement of thermal insulation by means of a thermal manikin (ISO 15831)*

ISO 11092, *Textiles — Physiological effects — Measurement of thermal and water-vapour resistance under steady-state conditions (sweating guarded-hotplate test)*

3 Terms and definitions

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

3.1 manufacturer

organization responsible for designing and manufacturing a sleeping bag covered by this European Standard

3.2 comfort temperature (T_{comf})

lower limit of the comfort range, down to which a sleeping bag user with a relaxed posture, such as lying on their back, is globally in thermal equilibrium and just not feeling cold

Note 1 to entry: For more information see C.7.3.

3.3 limit temperature (T_{lim})

lower limit at which a sleeping bag user with a curled up body posture is globally in thermal equilibrium and just not feeling cold

Note 1 to entry: For more information see C.7.2.

3.4 extreme temperature (T_{ext})

lower extreme temperature where the risk of health damage by hypothermia occurs

Note 1 to entry: For more information, see C.7.1.

Note 2 to entry: This is a point of danger which can lead to death.

3.5 maximum temperature (T_{max})

upper limit of comfort range, up to which a partially uncovered sleeping bag user just does not perspire too much

Note 1 to entry: For more information see C.7.4.

3.6 thermal manikin

dummy with human shape and heated body surface which allows the determination of thermal transfer through the sleeping bag under steady-state conditions (i.e. constant heat flux and temperature gradient between body surface and ambient air)