



# SLOVENSKI STANDARD

## SIST EN 12130:2018

01-november-2018

Nadomešča:  
SIST EN 12130:2000

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**Perje in puh - Preskusne metode - Ugotavljanje polnilne moči (masni volumen)**

Feather and down - Test methods - Determination of the filling power (massic volume)

Federn und Daunen - Prüfverfahren - Bestimmung der Füllkraft (Füllvolumen)

Plumes et duvets - Méthodes d'essais - Détermination du pouvoir gonflant (volume massique)

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**Ta slovenski standard je istoveten z: EN 12130:2018**  
SIST EN 12130:2018  
http://www.sist.si/log/standards/SIST/12130:2018/93-4888-885f-14082dccabfa/sist-en-12130-2018

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**ICS:**

59.040 Pomožni materiali za tekstilije Textile auxiliary materials

**SIST EN 12130:2018**

**en,fr,de**

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EUROPEAN STANDARD

EN 12130

NORME EUROPÉENNE

EUROPÄISCHE NORM

August 2018

ICS 59.040

Supersedes EN 12130:1998

English Version

## Feather and down - Test methods - Determination of the fill power (massic volume)

Plumes et duvets - Méthodes d'essais - Détermination du pouvoir gonflant (volume massique)

Federn und Daunen - Prüfverfahren - Bestimmung der Füllkraft (Füllvolumen)

This European Standard was approved by CEN on 7 May 2018.

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-CENELEC 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-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

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## European foreword

This document (EN 12130:2018) has been prepared by Technical Committee CEN/TC 443 "Feather and down", 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 February 2019, and conflicting national standards shall be withdrawn at the latest by February 2019.

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

This document supersedes EN 12130:1998.

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

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**EN 12130:2018 (E)****1 Scope**

This document specifies one procedure for determining the fill power (massic volume). This method is applicable to processed plumage fit for or constituting filled manufactured articles (e.g. anoraks, quilts, etc.).

**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 20187, *Paper, board and pulps - Standard atmosphere for conditioning and testing and procedure for monitoring the atmosphere and conditioning of samples (ISO 187)*

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

ISO 3310-1, *Test sieves — Technical requirements and testing — Part 1: Test sieves of metal wire cloth*

**3 Terms and definitions**

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

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

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

**3.1**  
**fill power**  
**fp**

height of the volume occupied by a specified quantity of filling material subjected to a specific pressure

Note 1 to entry: Fill power should be expressed in millimetres (mm)

Note 2 to entry: The volume occupied by a specific quantity of the filling material comprises internal pores of elements and pore spaces between elements.

**3.2**  
**massic volume**

volume occupied by a given mass of filling material, when subjected to a specific pressure

Note 1 to entry: Massic volume should be expressed in cubic centimetres per gram or cubic inches per 30 grams (g)

Note 2 to entry: The volume occupied by a specific quantity of filling material comprises internal pores of elements and pore spaces between elements

**3.3**  
**finished plumage**

plumage which has been passed through all the working processes, including washing, drying and all hygienic treatments

## 4 Principle

A test specimen, prepared according to method A, method B or method C, having a specified mass is placed in a cylinder and the material is loosened for a set period. Pressure by way of a platen is then applied to the filling material and after a stipulated time the level of the platen is noted. The massic volume is calculated with regard to the height and the known diameter of the graduated cylinder.

## 5 Apparatus

### 5.1 General

Any kind of apparatus can be used on the condition that it gives the same results, within experimental error, as described below. These alternative apparatus should be of such design to give satisfactory performance.

**5.2 Tester** (see Figure 1) which consists of:

**5.2.1 Cylinder**, levelled horizontally with an internal diameter of  $(289 \pm 1)$  mm, an height of  $(500 \pm 5)$  mm, and a flat bottom. The cylinder shall be made from smooth and antistatic material that allows the plumage to fall to the bottom friction less; furthermore the plate shall sink to the bottom without friction.

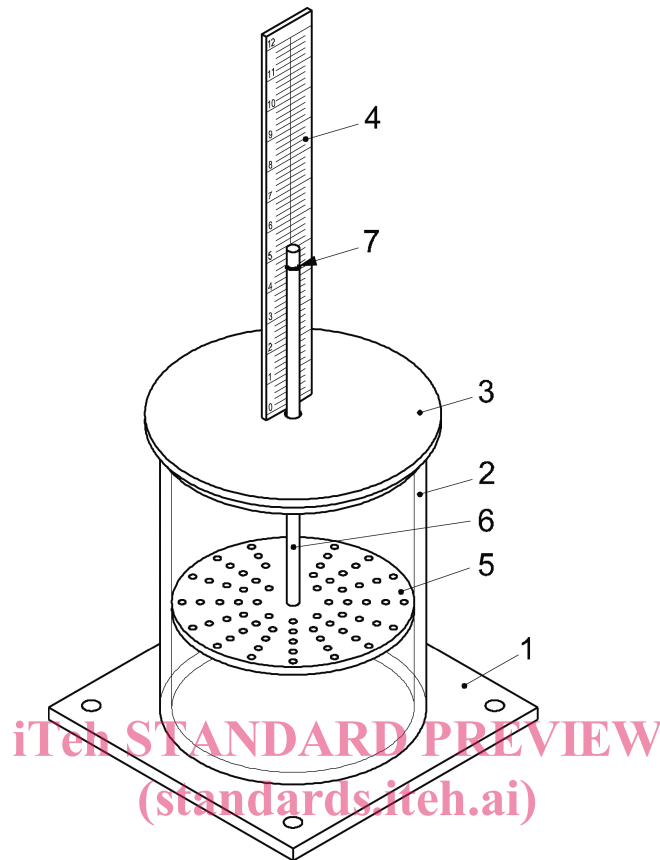
**5.2.2 Weight plate and measuring rod**, of mass  $(94,25 \pm 1,20)$  g. The weight plate, suspended by a measuring rod, with diameter  $(286 \pm 1)$  mm, shall have its underside flat and smooth and be made of a rigid material, so that it does not become deformed in use. The plate shall have 128 holes uniformly distributed with a hole diameter of 3 mm. The measuring rod shall be calibrated to set the measuring device to zero when the weight plate is resting on the bottom of the cylinder. The measure in millimetres can be on the rod or on a scale behind the rod.

In addition to the measuring rod, any other equipment can be used. The precondition is that the pressure exerted on the filling material is  $(14,8 \pm 0,2)$  Pa.

The total mass of the weight plate and the measuring rod is  $(94,25 \pm 1,20)$  g.

**5.2.3 Cover with graduated scale** which fits on the cylinder. An opening is located in the middle of the cover. The measuring rod can sink in this opening.

**5.2.4 Reading mark** for the monitoring of the zero point and the measuring height.



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**Key**

- 1 flat base
- 2 cylinder
- 3 cover
- 4 graduated scale (mm)

- 5 weight plate
- 6 measuring rod
- 7 reading mark

**Figure 1 — Example of manual fill power tester****5.3 Manual procedure for loosening the filling material**

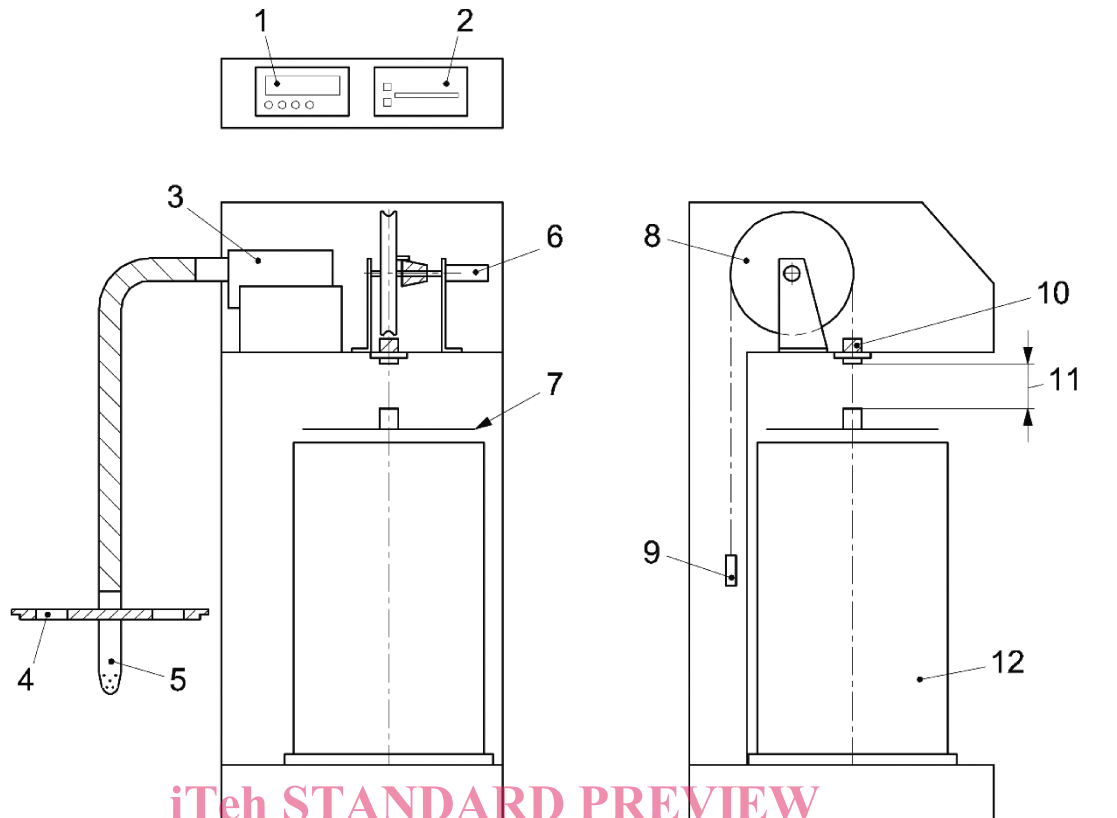
**Wooden stick for loosening**, 2 wooden rods 61 cm in length and 1 cm in diameter, tied at the top with a 30° angle between the two rods. Both ends shall be rounded.

**5.4 Automatic procedure for loosening the filling material:****5.4.1 Automatic machine** which consists of:

**5.4.1.1 Cover**, mounted in a frame which fits over the cylinder, consists of a wire screen of nominal aperture size 180 µm and a wire diameter 125 µm (see ISO 3310-1). In the centre of the cover is inserted a blow nozzle (5.4.1.2).

**5.4.1.2 Blow nozzle**, (see Figure 3) equipped with an adjustable valve in order to regulate the amount of air injected.





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**Key**

- 1 display  
2 printer  
3 blower  
4 cover

- 5 blow nozzle  
6 motor drive  
7 weight plate  
8 pulley

- 9 counter weight  
10 measuring device  
11 distance measured  
12 cylinder

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**Figure 2 — Example of automatic fill power tester**