
Feather and down - Test methods - Determination of the quantitative composition of feather and down (manual method)

Feather and down - Test methods - Determination of the quantitative composition of feather and down (manual method)

Federn und Daunen - Prüfverfahren - Bestimmung der quantitativen Zusammensetzung von Federn und Daunen (manuelles Verfahren)

Plumes et duvets - Méthodes d'essais - Détermination de la composition quantitative de plumes et duvets (méthode manuelle)

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ICS:

59.040 Pomožni materiali za tekstilije Textile auxiliary materials

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EUROPEAN STANDARD
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EN 12131

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ICS 59.040

Descriptors: stuffings, feathers, quantitative analysis, determination, components, tests, testing conditions, procedure, computation, labelling

English version

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quantitative composition of feather and down (manual method)

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This European Standard was approved by CEN on 23 March 1998.

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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

Foreword

This European Standard has been prepared by Technical Committee CEN/TC 222 "Feather and down as filling material for any article, as well as finished articles filled with feather and down", the secretariat of which is held by UNI.

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 1998, and conflicting national standards shall be withdrawn at the latest by October 1998.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

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1 Scope

This European Standard specifies a method for determining the composition of feather and/or down fit for or constituting filled manufactured articles in order to label it or to verify the denominations reported on the label.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

prEN 1885 Feather and down - Terms and definitions

prEN 1883 Feather and down - Sampling in view of tests

EN 20139 Textiles - Standard atmospheres for conditioning and testing (ISO 139:1973)

EN 20187 Paper, board and pulps - Standard atmosphere for conditioning and testing and procedure for monitoring the atmosphere and conditioning of samples (ISO 187:1990)

3 Definitions

For the purposes of this standard, the definitions in prEN 1885 apply.

4 Principle

A known quantity of the filling material, sampled according to prEN 1883 is separated by hand into its elements: the elements are collected into separate containers which are suitably marked.

The content of each container is weighed in order to determine the mass of the element concerned and therefore to calculate the relative percentages.

5 Apparatus

5.1 Box for the manual separation constituted normally of:

- black and smooth base about 450 mm in length and about 300 mm in width, having a perforated frame to suitably insert the containers;
- front part about 150 mm high open or provided with two openings wide enough to permit the operators' hands to enter the box;
- back part about 300 mm high;
- two side parts fit for front and back parts;
- cover, to avoid air draughts during the execution of test, made of glass or other transparent material to permit the separation of the elements;
- lamp allowing to illuminate the box.

5.2 Weighing containers with cover, made of aluminium or other light antistatic material fit to contain and weigh the different elements of the filling, capacity up to 300 ml.

5.3 Tweezers, fit to pick the single elements.

5.4 Analytical balance, with an accuracy of 0,1 mg

5.5 Mixing container whose base dimensions are 300 mm x 300 mm and 150 mm high.

6 Sampling, conditioning and preparation of the test specimens

6.1 Sampling is carried out according to prEN 1883

6.2 Conditioning is carried out according to EN 20139 and the temperature and relative humidity are measured according to EN 20187

6.3 Draw from the conditioned laboratory global sample, a sample of not less than 30 g, put it into the mixing container and mix by hand to make it as homogeneous as possible. From different places of this sample, draw three test specimens, each of them having a mass, weighed with an accuracy of 1 mg, of about 6 g for fillings with a expected down content equal to or less than 30% and of about 4 g for fillings with an expected down content more than 30%.

Each specimen is placed in a separate container.

It is necessary to analyse at least two test specimens. If the means of the analysis of the components differ by more than 10% relative, a third sample shall be analysed; The determinations shall be carried out by skilled operators.

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7 Procedure

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7.1 The separation procedure shall be carried out in a conditioned room in accordance with EN 20139 and the temperature and relative humidity are measured according to EN 20187

7.2 First separation

7.2.1 Mark the weighing containers (5.2) with the indication A, B, C, D, E and Q; weigh them with their cover, accuracy 1 mg.

Put one of the weighed test specimen (6.3) into the separation box (5.1).

With tweezers, remove initially all feathers from the plumage; brush the feathers between thumb and index finger of one hand to remove any down fibre or residual matter caught therein.

Identify the single elements which are extracted from the test specimen and put them in the suitable weighing containers, as indicated in Table 1.

Table 1: First separation of elements and denomination of the corresponding containers

Denomination of containers	Elements
A B C ₁ C ₂ D E Q	whole waterfowl feather whole landfowl feather broken and damaged waterfowl feather broken and damaged landfowl feather down, plumules, down fibres, feather fibres quill feathers residual matter

Weigh the contents of the weighing containers, indicating the mass in grams with an accuracy of 0,1 mg.

7.2.2 Calculate the percentage of mass lost during the first separation by the following formula:

$$100 \frac{M_1 - (A + B + C_1 + C_2 + D + E + Q)}{M_1} \quad \dots(1)$$

where:

M_1 is the mass of the test specimen analysed in the first separation and A, B, C₁, C₂, D, E, Q represent the mass of the contents of the containers.

Should the calculation give a loss more than 2% of M_1 , another test specimen should be analysed.

7.3 Second separation

7.3.1 Place the contents of weighing container D in the mixing container (5.5); mix the contents by hand to make it as homogeneous as possible. Take three test specimens from different sections of the mixing container (sub-test specimens): the mass of the sub-test specimens should be at least 0,2 g; weigh it with accuracy 0,1 mg .

7.3.2 Mark the weighing containers (5.2) with the indication F, G, H, I and K; weigh them with their cover, accuracy 0,1 mg .

Start the second separation from the sub-test specimen with the extraction of the down clusters and plumules using tweezers. Remove from the cluster or from the plumule the non entwined down fibres and the entwined feather fibres. Shake each single cluster or plumule five times from an up position to a down position and up again; afterwards slightly flick the elements as you go down and up again.

With the tweezers carefully remove the entwined feather fibres taking care not to remove entwined down fibres. If a down fibre is pulled while removing the feather fibre, the down fibre shall be placed into the container F, which contains down or plumules.

When this operation is completed, place the elements down and plumule in the weighing container F and the other elements, after being identified in the suitable weighing containers, as reported in Table 2.

Table 2: Second separation of elements and denomination of the corresponding containers

Denomination of containers	Elements
F G H I K	down and plumules down fibres waterfowl feather fibres landfowl feather fibres residual matter

Weigh the contents of the weighing containers reporting the mass in grams with the accuracy of 0,1 mg.

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7.3.3 Calculate the percentage of mass lost during the second separation by the following formula:

$$100 \frac{M_2 - (F + G + H + I + K)}{M_2} \quad \dots(2)$$

where:

M_2 is the mass of the sub-test specimen analysed in the second separation and F, G, H, I and K represent the masses of the contents of the containers.

If the result of the calculation leads to a loss of more than 2% of M_2 , another test specimen should be analysed.

8 Calculation and expression of results

8.1 Calculate the total percentage for each component, after both separations in relation to the total quantity analysed, as follows:

8.1.1 Whole waterfowl feather $100 \frac{A}{M_1}$... (3)

8.1.2 Whole landfowl feather $100 \frac{B}{M_1}$... (4)

8.1.3 Broken and damaged waterfowl feather $100 \frac{C_1}{M_1}$... (5)

8.1.4 Broken and damaged landfowl feather $100 \frac{C_2}{M_1}$... (6)

8.1.5 Quill feathers $100 \frac{E}{M_1}$... (7)

8.1.6 Down clusters and plumules $100 \frac{D}{M_1} \cdot \frac{F}{M_2}$... (8)

8.1.7 Down fibers $100 \frac{D}{M_1} \cdot \frac{G}{M_2}$... (9)

8.1.8 Waterfowl feather fibers $100 \frac{D}{M_1} \cdot \frac{H}{M_2}$... (10)

8.1.9 Landfowl feather fibers $100 \frac{D}{M_1} \cdot \frac{I}{M_2}$... (11)

8.1.10 Residual matter $100 \frac{Q}{M_1} + 100 \frac{D}{M_1} \cdot \frac{K}{M_2}$... (12)