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**Papir, karton, lepenka in vlaknine ter celulozni nanomateriali - Določevanje suhe snovi z metodo sušenja v sušilniku - 1. del: Materiali v trdni obliki (ISO/FDIS 638-1:2021)**

Paper, board, pulps and cellulosic nanomaterials - Determination of dry matter content by oven-drying method - Part 1: Materials in solid form (ISO/FDIS 638-1:2021)

Papier, Pappe, Faserstoff und cellulosehaltige Nanomaterialien - Bestimmung des Trockengehaltes durch das Wärmeschrankverfahren - Teil 1: Materialien in fester Form (ISO/FDIS 638-1:2021)

Papiers, cartons, pâtes et nanomatériaux cellulosiques - Détermination de la teneur en matières sèches par séchage à l'étuve - Partie 1: Matériaux sous forme solide (ISO/FDIS 638-1:2021)

**Ta slovenski standard je istoveten z: prEN ISO 638-1 rev**

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**ICS:**

|        |                          |                 |
|--------|--------------------------|-----------------|
| 85.040 | Vlaknine                 | Pulps           |
| 85.060 | Papir, karton in lepenka | Paper and board |

**oSIST prEN ISO 638-1:2022**                      **en,fr,de**

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**Paper, board, pulps and cellulosic  
nanomaterials — Determination of  
dry matter content by oven-drying  
method —****Part 1:  
Materials in solid form****iTeh STANDARD PREVIEW**  
(standards.iteh.ai)*Papiers, cartons, pâtes et nanomatériaux cellulosiques —  
Détermination de la teneur en matières sèches par séchage à  
l'étuve —*

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**Partie 1: Matériaux sous forme solide**<https://standards.iteh.ai/catalog/standards/sist/a59c57b9-481a-470c-a54b-77e466fe0850/osist-pren-iso-638-1-2022>**ISO/CEN PARALLEL PROCESSING**

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# ISO/FDIS 638-1:2021(E)

## 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.

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 documents 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](http://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](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 6, *Paper, board and pulps*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 172, *Pulp, paper and board*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This second edition cancels and replaces the first edition (ISO 638-1:2021), of which it constitutes a minor revision. The changes are as follows:

- correction of the cross-references in [Clause 8](#);
- editorial update.

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](http://www.iso.org/members.html).

## Introduction

Determination of dry matter content and moisture content are carried out for different purposes.

This document is used when the dry matter content is needed to calculate the results for chemical analysis or physical testing, or to determine the moisture content of paper, board, and pulp and cellulosic nanomaterials in solid form. An example of this is where the results of a chemical analysis for cadmium or manganese are required on the basis of the oven-dry mass of the sample.

ISO 638-2 <sup>[1]</sup> is dedicated to the determination of the dry matter content or water content of cellulosic nanomaterials in the form of suspensions.

ISO 287<sup>[2]</sup> should be used for the purpose of determining the average moisture content and the variation in moisture content (maximum and minimum values) of a lot of paper and board. In the converting of paper and board, moisture content is important as it can have an effect on processes such as printing and copying. Moisture content can have an effect on curl and dimensional stability.

ISO 4119<sup>[3]</sup> should be used in laboratory procedures or is referred to in other International Standards in which the concentration of an aqueous pulp suspension requires determination.

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# Paper, board, pulps and cellulosic nanomaterials — Determination of dry matter content by oven-drying method —

## Part 1: Materials in solid form

### 1 Scope

This document specifies an oven-drying method for the determination of the dry matter content in paper, board, pulp and cellulosic nanomaterials in solid form, which all can be produced from virgin and /or recycled materials.

It is also applicable to the determination of the dry matter content of paper and board for recycling.

The procedure is applicable to paper, board, and pulp and cellulosic nanomaterials which do not contain any appreciable quantities of materials other than water that are volatile at the temperature of  $105\text{ °C} \pm 2\text{ °C}$ . It is used, for example, in the case of pulp, paper, and board and cellulosic nanomaterial samples taken for chemical and physical tests in the laboratory, when a concurrent determination of dry matter content is required.

This method is not applicable to the determination of the dry matter content of slush pulp or to the determination of the saleable mass of pulp lots.

NOTE 1 ISO 638-2<sup>[1]</sup> specifies an oven-drying method for the determination of the dry matter content of suspensions of cellulosic nanomaterials, ISO 287<sup>[2]</sup> specifies the determination of the moisture content of a lot of paper and board; ISO 4119<sup>[3]</sup> specifies the determination of stock concentration of pulps; the ISO 801 series<sup>[4]</sup> specifies the determination of the saleable mass in lots.

NOTE 2 This document determines the total dry matter content of the sample, including any dissolved solids. If only the cellulosic material content free of dissolved solids is desired, dissolved solids are removed prior to measuring the dry matter content, e.g. by washing or dialysis, taking care to retain all cellulosic material; in cases where the sample is filterable without loss of cellulosic solids, ISO 4119<sup>[3]</sup> can be used to determine the stock consistency (content of cellulosic material in solid form)

### 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 186, *Paper and board — Sampling to determine average quality*

ISO 7213, *Pulps — Sampling for testing*

EN 17085, *Paper and board – Sampling procedures for paper and board for recycling*

### 3 Terms and definitions

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

**ISO/FDIS 638-1:2021(E)**

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/>

### 3.1 cellulosic nanomaterial CNM

material composed predominantly of cellulose, with any external dimension in the *nanoscale* (3.5)

Note 1 to entry: The terms nanocellulose (NC) and cellulose nanomaterial (CNM) are synonymous with cellulosic nanomaterial (CNM).

Note 2 to entry: Some cellulosic nanomaterials can be composed of chemically modified cellulose.

[SOURCE: ISO/TS 20477:2017, 3.3.1, modified — “or a material having internal structure or surface structure in the nanoscale, with the internal structure or surface structure composed predominantly of cellulose” deleted from the definition, “cellulose” changed to “cellulosic”, Note 3 to entry deleted.]

### 3.2 constant mass

mass of the test piece determined at the equilibrium condition after drying until the difference between two successive dryings and weighings, separated in time by at least half the initial drying period, does not exceed 0,1 % mass fraction of the test piece before drying

### 3.3 dry matter content

$w_{dm}$   
ratio of the mass of a test piece after drying to *constant mass* (3.2) at a temperature of 105 °C ± 2 °C under specified conditions, to its mass before drying

Note 1 to entry: The dry matter content is usually expressed as a percentage mass fraction.

### 3.4 moisture content

$w_{H_2O}$   
content of water in paper or board, i.e. the ratio of the loss of mass of a test piece, when dried at a temperature of 105 °C ± 2 °C under specified conditions, to its mass at the time of sampling

Note 1 to entry: The moisture content is normally expressed as a percentage mass fraction.

[SOURCE: ISO 287:2017, 3.1, modified – “at a temperature of 105 °C ± 2 °C” added.]

### 3.5 nanoscale

length range approximately from 1 nm to 100 nm

Note 1 to entry: Properties that are not extrapolations from larger sizes are predominately exhibited in this length range.

[SOURCE: ISO/TS 80004 1:2015, 2.1]

### 3.6 solid form

form in which water is held immobile within the cell wall, and/or lumen and/or interstices between the cellulosic materials, and/or is adsorbed at the cellulosic material surface, and which behaves as a discrete or separate unit that does not of itself flow (or as a set of such units)

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