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**Papir, karton, lepenka in vlaknine ter celulozni nanomateriali - Določevanje suhe snovi z metodo sušenja v sušilniku - 2. del: Suspenzije celuloznih nanomaterialov (ISO/FDIS 638-2:2021)**

Paper, board, pulps and cellulosic nanomaterials - Determination of dry matter content by oven-drying method - Part 2: Suspensions of cellulosic nanomaterials (ISO/FDIS 638-2:2021)

Papier, Pappe, Faserstoff und cellulosehaltige Nanomaterialien - Bestimmung des Trockengehaltes durch das Wärmeschrankverfahren - Teil 2: Suspensionen von cellulosehaltigen Nanomaterialien (ISO/FDIS 638-2:2021)

Papiers, cartons, pâtes et nanomatériaux cellulosiques - Détermination de la teneur en matières sèches par séchage à l'étuve - Partie 2: Suspensions de nanomatériaux cellulosiques (ISO/FDIS 638-2:2021)

**Ta slovenski standard je istoveten z: prEN ISO 638-2 rev**

**ICS:**

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

**oSIST prEN ISO 638-2:2022 en,fr,de**

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

Part 2:

**Suspensions of cellulosic  
nanomaterials****(standards.iteh.ai)***Papiers, cartons, pâtes et nanomatériaux cellulosiques —  
Détermination de la teneur en matières sèches par séchage à  
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*Partie 2: Suspensions de nanomatériaux cellulosiques***ISO/CEN PARALLEL PROCESSING**

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CP 401 • Ch. de Blandonnet 8  
CH-1214 Vernier, Geneva  
Phone: +41 22 749 01 11  
Email: [copyright@iso.org](mailto:copyright@iso.org)  
Website: [www.iso.org](http://www.iso.org)

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## ISO/FDIS 638-2:2021(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 638-2:2021), of which it constitutes a minor revision. The changes are as follows:

- editorial update;
- addition of a note in [Table B.2](#).

A list of all parts in the ISO 638 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](http://www.iso.org/members.html).

## Introduction

Determination of dry matter content and water 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 water content of cellulosic nanomaterial suspensions.

ISO 638-1<sup>[1]</sup> is dedicated to the determination of the dry matter content or moisture content in paper, board, pulp and cellulosic nanomaterials in solid form, which all can be produced from virgin and/or recycled materials.

ISO 287<sup>[2]</sup> is 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> is used in laboratory procedures or is referred to in other International Standards in which the stock concentration of an aqueous pulp suspension requires determination.

ISO 801 (all parts)<sup>[4]</sup> specifies the determination of saleable mass in lots.

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

## Part 2: Suspensions of cellulosic nanomaterials

### 1 Scope

This document specifies an oven-drying method for the determination of the dry matter content in suspensions of cellulosic nanomaterials. The procedure is applicable to cellulosic nanomaterial suspensions 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 cellulosic nanomaterial suspensions samples taken for chemical and physical tests in the laboratory, when a concurrent determination of dry matter content is required.

NOTE 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.

### 2 Normative references

There are no normative references in this document.

### 3 Terms and definitions

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

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), or a material having internal structure or surface structure in the nanoscale, with the internal structure or surface structure composed predominantly of cellulose

Note 1 to entry: The terms nanocellulose (NC) and cellulose nanomaterial (CNM) are alternative terms for 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.]

## ISO/FDIS 638-2:2021(E)

### 3.2

#### constant mass

<container> mass reached by a container after drying until the difference between two successive dryings and weighings does not exceed a specified mass fraction of the test specimen after drying

### 3.3

#### constant mass

<test specimen> mass reached by a *test specimen* (3.7) 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 a specified mass fraction of the test specimen after drying

### 3.4

#### dry matter content

ratio of the mass of a *test specimen* (3.7), after drying to *constant mass* (3.3) at a temperature of  $105\text{ °C} \pm 2\text{ °C}$  under specified conditions, to its mass before drying

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

### 3.5

#### 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

#### suspension

heterogeneous mixture of materials comprising a liquid and a finely dispersed solid material

Note 1 to entry: As the concentration of cellulosic nanomaterial increases, the suspension becomes more viscous from liquid to gel.

Note 2 to entry: In the case of cellulosic nanomaterials, a material of a mass fraction of 1 % to 5 % concentration is generally in gel form depending on the type of cellulosic nanomaterial. Above these concentrations, the material can be in solid form such as powder.

[SOURCE: ISO/TS 80004-6:2021, 3.13, modified — Notes 1 and 2 to entry added.]

### 3.7

#### test specimen

portion of the sample on which the test is conducted

## 4 Principle

Test specimens taken from cellulosic nanomaterial samples in suspension form are weighed before and after drying to constant mass.

The dry matter content is calculated from the mass of the test specimen before and after drying.

## 5 Apparatus

**5.1 Balance**, which can be read to the nearest 0,1 mg.

**5.2 Containers**, water vapour-proof, with tightly fitting lids, and made from a material (e.g. glass or plastic) not affected by the conditions of test.

**5.3 Drying oven**, capable of maintaining the air temperature at  $105\text{ °C} \pm 2\text{ °C}$ , and suitably ventilated.