
Papir, karton, lepenka in vlaknine ter celulozni nanomateriali - Določevanje suhe snovi z metodo sušenja v sušilniku - 2. del: Suspenzije celuloznih nanomaterialov (ISO/DIS 638-2:2020)

Paper, board, pulps and cellulosic nanomaterials - Determination of dry matter content by oven-drying method - Part 2: Suspensions of cellulosic nanomaterials (ISO/DIS 638-2:2020)

Papier, Pappé, Faserstoff und cellulosehaltige Nanomaterialien - Bestimmung des Trockengehaltes durch das Wärmeschränkverfahren - Teil 2: Suspensionen von cellulosehaltigen Nanomaterialien (ISO/DIS 638-2:2020)

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/DIS 638-2:2020)

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

ICS:

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

oSIST prEN ISO 638-2:2020

en,fr,de

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DRAFT INTERNATIONAL STANDARD

ISO/DIS 638-2

ISO/TC 6

Secretariat: SCC

Voting begins on:
2020-07-02Voting terminates on:
2020-09-24

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

Part 2: Suspensions of cellulosic nanomaterials

ICS: 85.040; 85.060

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ISO/CEN PARALLEL PROCESSING



Reference number
ISO/DIS 638-2:2020(E)

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Published in Switzerland

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Foreword

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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).

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For an explanation on 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 the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 6 *Paper, board and pulps*.

This third edition cancels and replaces the second edition (ISO 638:2008), which has been technically revised.

The main changes compared to the previous edition are as follows:

- Introduction of cellulosic nanomaterials and paper and board for recycling in the scope
- Split of the standard in two parts
- Technical revision of the procedure
- Editorial revision of the document
- Update of precision clause

Introduction

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

This part of International Standard ISO 638 (ISO 638-2) 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.

Part 1 of International Standard ISO 638 (ISO 638-1) [1] is dedicated to the determination of the dry matter content or moisture content of paper, board, paper and board for recycling and cellulosic nanomaterials in solid form.

ISO 287 [2] 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 [3] 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.

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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 1 ISO 638-1 [1] specifies the total dry matter content of paper, board, paper and board for recycling and cellulosic nanomaterials in solid form; ISO 287 [2] specifies the determination of moisture content of a lot of paper and board; ISO 4119 [3] specifies the determination of stock concentration of aqueous pulp suspensions; ISO 801 (all parts) [4] specifies the determination of 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 should be removed prior to measuring the dry matter content e.g. by washing or dialysis, taking care to retain all cellulosic material.

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/TS 20477:2017, *Nanotechnologies — Standard terms and their definition for cellulose nanomaterial*

ISO/TS 80004-1:2015, *Nanotechnologies — Vocabulary — Part 1: Core terms*

ISO/TS 80004-6:2013, *Nanotechnologies — Vocabulary — Part 6: Nano-object characterization*

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:

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

ISO/DIS 638-2:2020(E)

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]

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 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, after drying to constant mass 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

[SOURCE: ISO/TS 80004-6:2013, 2.13]

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 case of cellulosic nanomaterials, a material of 1 wt% to 5 wt% 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.

3.7 test specimen

portion of the sample on which the test is conducted