

---

---

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

**Part 2:  
Suspensions of cellulosic  
nanomaterials**

*Papiers, cartons, pâtes et nanomatériaux cellulosiques —  
Détermination de la teneur en matières sèches par séchage à  
l'étuve —*

*Partie 2: Suspensions de nanomatériaux cellulosiques*



This document is a preview generated by EUS



**COPYRIGHT PROTECTED DOCUMENT**

© ISO 2022

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office  
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)

Published in Switzerland

# Contents

	Page
Foreword.....	iv
Introduction.....	v
1 Scope.....	1
2 Normative references.....	1
3 Terms and definitions.....	1
4 Principle.....	2
5 Apparatus.....	2
6 Sampling.....	3
7 Preparation of test specimens.....	3
8 Procedure.....	3
9 Calculation and expression of results.....	5
10 Precision.....	5
11 Test report.....	5
Annex A (informative) Calculation of the water content.....	6
Annex B (informative) Precision.....	7
Bibliography.....	9

## 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)).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

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.



# 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.]