



NSAI
Standards

Irish Standard
I.S. EN ISO 20706-1:2019&LC:2020

Textiles - Qualitative and quantitative analysis of some bast fibres (flax, hemp, ramie) and their blends - Part 1: Fibre identification using microscopy methods (ISO 20706-1:2019, Corrected version 2020-03)

I.S. EN ISO 20706-1:2019&LC:2020

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This document is based on:

Published:

*This document was published
under the authority of the NSAI
and comes into effect on:*

2020-05-15

ICS number:

59.060.01

NOTE: If blank see CEN/CENELEC cover page

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National Foreword

I.S. EN ISO 20706-1:2019&LC:2020 is the adopted Irish version of the European Document EN ISO 20706-1:2019, Textiles - Qualitative and quantitative analysis of some bast fibres (flax, hemp, ramie) and their blends - Part 1: Fibre identification using microscopy methods (ISO 20706-1:2019, Corrected version 2020-03)

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Corrected Version

Reference: EN ISO 20706-1:2019

Title: Textiles - Qualitative and quantitative analysis of some bast fibres (flax, hemp, ramie) and their blends - Part 1: Fibre identification using microscopy methods (ISO 20706-1:2019, Corrected version 2020-03)

Work Item: 00248648

Brussels, 2020-04-08

Please include the following minor editorial correction(s) in the document related to:

the following language version(s) :

- ☒ English
- ☒ French
- ☐ German

for the following procedure :

- ☐ PQ/UQ
- ☐ Enquiry
- ☐ 2nd Enquiry
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- ☐ 2nd Parallel Formal Vote
- ☐ UAP
- ☐ TC Approval
- ☐ 2nd TC Approval
- ☐ Publication
- ☒ Parallel Publication

It has been brought to our attention that this document, issued on 2019-12-18, requires modification.

ISO has published (Corrected version 2020-03) of ISO 20706-1:2019.

Titles and Forewords have been updated accordingly.

Please find enclosed the updated English and French versions.

We apologise for any inconvenience this may cause.

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN ISO 20706-1

December 2019

ICS 59.060.01

English Version

**Textiles - Qualitative and quantitative analysis of some
bast fibres (flax, hemp, ramie) and their blends - Part 1:
Fibre identification using microscopy methods (ISO
20706-1:2019, Corrected version 2020-03)**

Textiles - Analyses qualitative et quantitative de
certaines fibres libériennes (lin, chanvre, ramie) et de
leurs mélanges - Partie 1: Identification des fibres à
l'aide de méthodes microscopiques (ISO 20706-1:2019,
Version corrigée 2020-03)

Textilien - Qualitative und quantitative Analyse einiger
Bastfasern (Flachs, Hanf, Ramie) und ihrer Mischungen
- Teil 1: Identifikation der Fasern mittels Mikroskopie
(ISO 20706-1:2019, korrigierte Fassung 2020-03)

This European Standard was approved by CEN on 13 December 2019.

This European Standard was corrected and reissued by the CEN-CENELEC Management Centre on 08 April 2020.

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CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

EN ISO 20706-1:2019 (E)

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European foreword

This document (EN ISO 20706-1:2019) has been prepared by Technical Committee ISO/TC 38 "Textiles" in collaboration with Technical Committee CEN/TC 248 "Textiles and textile products" the secretariat of which is held by BSI.

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 June 2020, and conflicting national standards shall be withdrawn at the latest by June 2020.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

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Endorsement notice

The text of ISO 20706-1:2019, Corrected version 2020-03 has been approved by CEN as EN ISO 20706-1:2019 without any modification.

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INTERNATIONAL STANDARD

**ISO
20706-1**

First edition
2019-12

Corrected version
2020-03

Textiles — Qualitative and quantitative analysis of some bast fibres (flax, hemp, ramie) and their blends —

Part 1: Fibre identification using microscopy methods

*Textiles — Analyses qualitative et quantitative de certaines fibres
libériennes (lin, chanvre, ramie) et de leurs mélanges —*

Partie 1: Identification des fibres à l'aide de méthodes microscopiques



Reference number
ISO 20706-1:2019(E)

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Published in Switzerland

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ISO 20706-1:2019(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).

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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.

This document was prepared by Technical Committee ISO/TC 38, *Textiles*.

A list of all parts in the ISO 20706 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.

This corrected version of ISO 20706-1:2019 incorporates the following corrections:

- in [8.3](#), the SEM procedure structure has been corrected;
- in [7.2.1](#), the missing reference to [Annex H](#) has been added.

Introduction

Among bast fibres used for textiles, flax and hemp are the most expensive. Flax is grown mainly (85 %) in a small coastal area of Northern Europe; hemp textile products are rare. Ramie is less expensive than flax and hemp: 10 % to 20 % cheaper for medium count yarns — and the difference increases for fine counts.

Flax and other bast fibres, such as hemp and ramie exhibit great similarities in their physical and chemical properties, so that their fibre specie and their blends are difficult to distinguish from each other by both mechanical and chemical methods. In addition, these fibres show nearly resembling fibre morphology. It is very difficult to accurately identify the fibre species and accurately determine the fibre content of such fibre blends by current testing means.

Research works on accurate identification of bast fibre has been a long undertaking.

In order to promote fair labelling of products and anti-counterfeiting protection, The European Confederation of Flax and Hemp (CELC) created the Bast Fibre Authority in 2013, inviting laboratories, research centres and providers of quality and control services to develop a common technical protocol. Five laboratories joined in 2013 and comparison testing were carried out between them on May–June 2014 and January–February 2015.

NOTE CELC, founded in 1951, is a non-profit organization and an association for reflection, market analysis, industry concertation and strategic orientations. CELC is the only agro-industrial European organization that covers all stages of production and processing of flax/linen and hemp. It is the chosen representative of more than 10,000 firms in 14 European countries, promoting the fibre from plant to finished product (including sections dealing with agriculture, retting/scutching, trading, spinning, weaving and technical uses).

At present, the most widely used and reliable ones include light microscopy (LM) method and scanning electron microscopy (SEM) method. The advantage of LM method is that the internal morphology of fibres can be observed, but some subtle surface structures are not able to be clearly displayed. Decoloration process can be carried out on dark samples for testing, while improper decoloration process will affect the judgment of fibre analyst.

The scanning electron microscopy (SEM) method shows opposite characteristics to those of LM method. Therefore, some types of fibres need to be identified by scanning electron microscope.

When some samples are difficult to be identified, light microscopy method and scanning electron microscopy method should be used together to identify in order to utilize the advantages of both methods.

It is proven in practice that accuracy of fibre analysis is highly related to the ample experience, fully understanding and extreme familiarity of the fibre analyst to the morphology of various types of bast fibres. Therefore, besides text description, a large amount of micrographs of different types of flax, hemp and ramie are given in [Annex A](#), [Annex B](#), [Annex C](#) and [Annex D](#) of this document.

Textiles — Qualitative and quantitative analysis of some bast fibres (flax, hemp, ramie) and their blends —

Part 1: Fibre identification using microscopy methods

1 Scope

This document specifies methods for the identification of some bast fibres (flax, hemp, ramie) using both light microscopy (LM) and scanning electron microscopy (SEM). This document is also applicable to blends of these bast fibres and products made from them.

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 3696, *Water for analytical laboratory use — Specification and test methods*

ISO 20705:2019, *Textiles — Quantitative microscopical analysis — General principles of testing*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 20705 and the following 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/>

3.1

bast fibre

composite fibre obtained from the bast of certain plants, mainly constituted of cellulose and accompanied with incrusting and intercellular materials (pectin bodies, hemicellulose, lignin)

Note 1 to entry: Adapted from ISO 6938:2012, 2.3.

3.2

flax

fibre from the basts of flax *Linum usitatissimum*

Note 1 to entry: Adapted from ISO 6938:2012, 3.2.2.5.

3.3

hemp

fibre from the basts of *Cannabis sativa*

Note 1 to entry: Adapted from ISO 6938:2012, 3.2.2.1.

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