

INTERNATIONAL STANDARD

**ISO
302**

Second edition
2004-07-01

Pulps — Determination of Kappa number

Pâtes — Détermination de l'indice Kappa



Reference number
ISO 302:2004(E)

© ISO 2004

PDF disclaimer

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

This document is a preview generated by EVS

© ISO 2004

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

Contents

Page

Foreword	iv
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Principle	2
5 Reagents and materials	2
6 Apparatus and equipment	3
7 Sampling and preparation of sample	3
7.1 Sampling	3
7.2 Sample preparation	3
8 Procedure	3
8.1 General	3
8.2 Blank	4
8.3 Determination	4
9 Calculations	6
9.1 Kappa number 5 to 100	6
9.2 Kappa number 1 to 5	7
9.3 Expression of results	8
9.4 Example of calculation	8
10 Precision	8
10.1 Reference pulp	8
10.2 Repeatability	8
10.3 Reproducibility	9
11 Test report	9
Bibliography	10

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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

ISO 302 was prepared by Technical Committee ISO/TC 6, *Paper, board and pulps*, Subcommittee SC 5, *Test methods and quality specifications for pulps*.

This second edition cancels and replaces the first edition (ISO 302:1981), which has been technically revised.

Pulps — Determination of Kappa number

1 Scope

This International Standard specifies a method for the determination of the Kappa number of pulp. The Kappa number is an indication of the lignin content or bleachability of pulp.

This International Standard is applicable to all kinds of chemical pulps and semi-chemical pulps within the Kappa number range 1 to 100. For pulps with a Kappa number exceeding 100, use the chlorine-consumption procedure (ISO 3260) to describe the degree of delignification.

To achieve the greatest precision and accuracy, the sample size should be adjusted so that the consumption of permanganate falls between 20 % and 60 % of the amount added.

NOTE There is no general and unambiguous relationship between the Kappa number and the lignin content of pulp. The relationship varies according to the wood species and delignification procedure. All compounds oxidized by KMnO_4 , not only lignin, will increase the consumption of KMnO_4 , and thereby increase the Kappa number (see [7]). If the Kappa number is to be used to derive an index of pulp lignin content, specific relationships will have to be developed for each pulp type.

2 Normative references

The following referenced documents are indispensable for the application 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 638, *Pulps — Determination of dry matter content*

ISO 7213, *Pulps — Sampling for testing*

3 Terms and definitions

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

3.1

oxidation capacity

relative amount of permanganate oxidized (expressed as MnO_2) of the total oxidation capacity

3.2

total oxidation capacity

oxidation capacity (permanganate consumption) when all permanganate is oxidized into Mn^{2+}

3.3.

Kappa number of pulp

number of millilitres of 0,02 mol/l potassium permanganate solution consumed under the specified conditions by one gram of pulp (calculated on an oven-dry basis)

NOTE The results are corrected to a value corresponding to that obtained when 50 % of the total oxidation capacity of the permanganate is consumed in the test at a temperature of 25 °C.