INTERNATIONAL STANDARD

ISO 6588-1

Fourth edition
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Paper, board and pulps — Determination of pH of aqueous extracts —

Part 1: Cold extraction

Papier, carton et pâtes — Détermination du pH des extraits aqueux — Partie 1: Extraction à froid

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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).

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).

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 6, *Paper, board and pulps*.

This fourth edition cancels and replaces the third edition (ISO 6588-1:2020), of which it constitutes a minor revision. The changes compared to the previous edition are as follows:

— clause references in 7.1, 8.1 and Clause 10 d) have been corrected.

A list of all parts in the ISO 6588 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.

Introduction

Kraft fibre is well known to contain ionisable groups that are fixed to or in the fibre wall. In order to fulfil the electro-neutrality, these groups are balanced by an equivalent number of positive charges, which can be either protons or various metal ions. Especially in pulp suspensions at low ionic strengths, this can give rise to a marked uneven distribution of mobile ions between the volume held by the fibre wall and the bulk suspension liquor. This means that the fibre acts as an ion exchanger. These ion-exchange phenomena can be modelled very well with the Donnan theory[6][7].

If a relatively clean pulp fibre sample, for example bleached dried pulp, is diluted in deionised water, the result will be a pulp suspension with a very low ionic strength. In such a system, most of the cations present, including protons, will be concentrated in the water volume held by the fibre wall. If the pH is measured, it is measured in the bulk suspension liquor. By adding salt to this kind of system, the ion exchange phenomena is decreased, and the concentration of different cations will be the same in the water held by the fibre wall and in the bulk suspension liquor. Since the process waters always contain a certain amount of ions, such a salt addition gives a more realistic environment when measuring the pH of relatively clean pulp samples.

Based on the foregoing, two ISO Standards (ISO 6588-1 and ISO 29681) are available for determination of the pH of cold aqueous extracts of paper, board, or pulps. In ISO 29681, a salt solution is added prior to extraction; however, in ISO 6588-1, the extraction is carried out with distilled or deionized water. ISO 29681 is specifically applicable to bleached pulps from virgin fibres and to pulp samples having a low ionic strength for which the pH-value gives more realistic results related to mill conditions than those obtained with ISO 6588-1.

It is necessary to be aware that the results will not be the same when measuring pH according to ISO 6588-1 and to ISO 29681. The difference can be significant especially when measuring pulps having a low ionic strength.

ISO 6588-2 differs from this document only as regards the extraction conditions. No general guidance can be given as to which of the two procedures (hot or cold) is best suited in a particular situation.

It should be noted that in ISO 6588-1, addition of a salt solution is performed after extraction and filtration only for the purpose of obtaining a more stable and accurate pH measurement.