

INTERNATIONAL
STANDARD

ISO
6588-1

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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*



Reference number
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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 6588-1 was prepared by Technical Committee ISO/TC 6, *Paper, board and pulps*.

This first edition of ISO 6588-1, together with ISO 6588-2, cancels and replaces ISO 6588:1981, which has been technically revised. The work within ISO/TC 6 has shown that the results obtained with the two parts of ISO 6588 are equivalent to those obtained in ISO 6588:1981. There are four major differences compared with the previous edition of ISO 6588:1981:

- a) ISO 6588 has been divided into two parts: one dealing with cold extraction and the other with hot extraction;
- b) the determination is now carried out on an air-dry sample without determination of dry matter content, as the amount of sample is not critical;
- c) the extract is filtered;
- d) a salt solution is added to speed up the measurement.

ISO 6588 consists of the following parts, under the general title *Paper, board and pulps — Determination of pH of aqueous extracts*:

— *Part 1: Cold extraction*

— *Part 2: Hot extraction*

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 [2, 3].

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 will be measured in the bulk suspension liquor. By adding salt to this kind of system, the ion exchange phenomena will be 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 will give a more realistic environment when measuring the pH of relatively clean pulp samples.

It is necessary to be aware of these effects when interpreting the measured pH-values of highly purified pulps.

