

INTERNATIONAL STANDARD

ISO
10775

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Paper, board and pulps — Determination of cadmium content — Atomic absorption spectrometric method

*Papier, carton et pâtes — Détermination de la teneur en cadmium —
Méthode par spectrométrie d'absorption atomique*



Reference number
ISO 10775:1995(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.

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.

International Standard ISO 10775 was prepared by Technical Committee ISO/TC 6, *Paper, board and pulps*.

Paper, board and pulps — Determination of cadmium content — Atomic absorption spectrometric method

1 Scope

This International Standard specifies a method for the determination of traces of cadmium in all types of paper, board and pulp, including products containing recycled fibre, that can be wet-combusted in nitric acid as specified in this International Standard.

The lower limit of the determination depends on the equipment used and is normally about 10 µg/kg. Cadmium present in pigments and fillers that do not dissolve in nitric acid under the conditions of test may not be determined quantitatively.

NOTE 1 It has been claimed that the dissolution of cadmium from pigments other than calcium carbonate is incomplete by a few per cent.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 186:1994, *Paper and board — Sampling to determine average quality*.

ISO 287:1985, *Paper and board — Determination of moisture content — Oven-drying method*.

ISO 638:1978, *Pulps — Determination of dry matter content*.

ISO 7213:1981, *Pulps — Sampling for testing*.

3 Principle

The sample is treated with nitric acid in a closed vessel. The resulting solution is diluted and cadmium content determined by atomic absorption spectrometry using the graphite furnace technique.

Wet combustion in the autoclave is the reference procedure. Wet combustion in a microwave oven is permissible if it has been shown experimentally, with the same oven and the same type of sample, that there is no significant difference in the results.

4 Reagents

All reagents shall be of highest possible purity. The quality normally designated "pro analysi" or "analytical reagent (AR)" is often not sufficiently pure. Use only freshly distilled and deionized water or water of equivalent purity.

NOTE 2 Commercially available solutions may also be used.

4.1 Concentrated nitric acid, $c(\text{HNO}_3) = 15 \text{ mol/l}$.

Use a quality specially made for use in the determination of trace metals.

4.2 Dilute nitric acid, $c(\text{HNO}_3) = 0,15 \text{ mol/l}$.

Dilute with water 10 ml of concentrated nitric acid (4.1) to one litre.

4.3 Cadmium nitrate standard solution, $\rho(\text{Cd}) = (1,000 \pm 0,002) \text{ g/l}$, made, for example, by dissolving 2,744 g of cadmium nitrate tetrahydrate, $\text{Cd}(\text{NO}_3)_2 \cdot 4\text{H}_2\text{O}$, per litre of nitric acid, $c(\text{HNO}_3) = 0,5 \text{ mol/l}$.