
INTERNATIONAL STANDARD



2144

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

Paper and board — Determination of ash

Papiers et cartons — Détermination des cendres

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FOREWORD

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO Member Bodies). The work of developing International Standards is carried out through ISO Technical Committees. Every Member Body interested in a subject for which a Technical Committee has been set up 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.

Draft International Standards adopted by the Technical Committees are circulated to the Member Bodies for approval before their acceptance as International Standards by the ISO Council.

Prior to 1972, the results of the work of the Technical Committees were published as ISO Recommendations; these documents are now in the process of being transformed into International Standards. As part of this process, Technical Committee ISO/TC 6 has reviewed ISO Recommendation R 2144 and found it suitable for transformation. International Standard ISO 2144 therefore replaces ISO Recommendation R 2144-1971.

ISO Recommendation R 2144 was approved by the Member Bodies of the following countries :

Australia	Japan	Spain
Austria	Korea, Rep. of	Sweden
Czechoslovakia	Netherlands	Switzerland
Egypt, Arab Rep. of	New Zealand	Thailand
Germany	Norway	Turkey
India	Poland	United Kingdom
Iran	Portugal	U.S.A.
Ireland	Romania	U.S.S.R.
Israel	South Africa, Rep. of	

The Member Body of the following country has subsequently approved this Recommendation :

Finland

The Member Bodies of the following countries expressed disapproval of the Recommendation on technical grounds :

Belgium
France

The Member Bodies of the following countries disapproved the transformation of ISO/R 2144 into an International Standard :

Belgium
Canada
Czechoslovakia

Paper and board – Determination of ash

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies a procedure for the determination of ash of paper and board.

2 REFERENCES

ISO/R 186, *Method of sampling paper and board for testing.*

ISO/R 187, *Method for the conditioning of paper and board test samples.*

ISO/R 231, *Paper vocabulary – Third series of terms.*

ISO/R 287, *Method for the determination of the moisture content of paper (oven-drying method).*

3 DEFINITION

ash content: The amount of residue of a material left after incineration determined and expressed according to the procedure specified in this International Standard.

4 APPARATUS

4.1 Crucibles, complete with well-fitting lids, and made from materials such as platinum, fused alumina, porcelain or silica which do not change in mass under ignition conditions.

NOTE – As platinum reacts at high temperatures with barium carbonate and zinc compounds, the use of platinum crucibles shall be avoided when it is suspected that these materials are present in the sample.

4.2 Balance, with overall accuracy of 0,1 mg.

4.3 Electric muffle furnace, having an operating temperature of 900 ± 25 °C. A gas-fired muffle or a gas burner may be used provided it is capable of giving a similar temperature.

4.4 Desiccator.

5 SAMPLING

Carry out the sampling in accordance with the procedure given in ISO/R 186.

6 PREPARATION OF TEST PIECE

The test piece shall consist of a number of small portions, of total mass not less than 1 g, or sufficient to give an ash of not less than 10 mg, taken from various parts of the sample in such a manner as to be thoroughly representative of it.

In the case of ashless paper or board where the mineral content is extremely low, take sufficient paper or board to give an ash of not less than 2 mg.

It is not necessary to condition the test piece, unless the result is required on an air-dry basis, in which case carry out conditioning in accordance with ISO/R 187.

Since the result is normally required in terms of the moisture-free condition however, it is recommended that a test for moisture content be carried out independently according to ISO/R 287, on a separate portion of the sample weighed out at the same time. The result shall be used to convert the ash content determined on the air-dry sample to the moisture-free (oven-dry) basis. Alternatively, the determination may be carried out on the oven-dried paper or board by drying the test piece to constant mass at 103 ± 2 °C and weighing to the nearest 0,1 mg; this may be done with sufficient accuracy for the purpose in the ignited and weighed crucible used for ashing the paper or board (if the lid is sufficiently well-fitting).

7 PROCEDURE

Ignite the crucible and lid, cool in the desiccator and weigh to the nearest 0,1 mg; then weigh the test piece to the nearest 0,1 mg in the crucible. Ignite the crucible and contents, taking care to cover the crucible during the early stages of ignition to avoid loss of small particles. Start the ignition at a low temperature and raise it gradually to 900 ± 25 °C¹⁾ as the volatile matter is driven off. With an electric muffle furnace this can be accomplished by placing the crucible at the entrance for a few minutes until all volatile matter has been evolved, after which the crucible

1) Temperatures shall be raised at such a rate that the test piece does not burst into flame, which causes draught and loss of material.