

INTERNATIONAL STANDARD

ISO
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Paper, board and pulps — Fibre furnish analysis —

Part 4: Graff “C” staining test

*Papier, carton et pâtes — Détermination de la composition fibreuse —
Partie 4: Coloration de Graff “C”*



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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.

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 9184-4 was prepared by Technical Committee ISO/TC 6, *Paper, board and pulps*.

ISO 9184 consists of the following parts, under the general title *Paper, board and pulps — Fibre furnish analysis*:

- *Part 1: General method*
- *Part 2: Staining guide*
- *Part 3: Herzberg staining test*
- *Part 4: Graff "C" staining test*
- *Part 5: Lofton-Merritt staining test (modification of Wisbar)*
- *Part 6: Weight factors by fibre coarseness method*
- *Part 7: Weight factors by comparison method*

Part 1 gives general instructions for the performance of fibre furnish analysis. It should be used in conjunction with the staining guide (see part 2) and the staining tests (see parts 3 to 5).

Additional parts of this International Standard will be published if required by the development of new kinds of fibres or new staining tests.

Annex A of this part of ISO 9184 is for information only.

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Paper, board and pulps — Fibre furnish analysis —

Part 4:

Graff "C" staining test

1 Scope

This part of ISO 9184 specifies the preparation, use and colour reactions of Graff "C" stain in fibre furnish analysis. It should be used in conjunction with ISO 9184-1 and, if necessary, with other staining tests defined in ISO 9184-2.

The field of application of Graff "C" stain is very large; it allows the identification of almost all the common papermaking fibres. However, this is based upon very minute differences in the shade and strength of the colours, and accordingly calls for a great deal of training and experience. In practice, the main applications of the Graff "C" stain are as follows:

- Differentiation of chemical, semi-chemical and mechanical pulps.
- Differentiation of bleached kraft and sulfite in softwood pulps. Generally, the colour difference is sufficient for counting the fibres.
- Differentiation of kraft and sulfite in hardwood pulps. The difference in colour is more obvious in unbleached than in bleached pulps.
- Differentiation of softwood and hardwood pulps (except dissolving grade pulps). In kraft pulps, the colour difference is sufficient; in sulfite pulps it is somewhat weaker, although in most cases sufficient for counting.
- Differentiation of bleached straw and esparto pulps in softwood pulps. The colour difference is distinct.

2 Normative reference

The following standard contains provisions which, through reference in this text, constitute provisions of this part of ISO 9184. At the time of publication, the edition indicated was valid. All standards are subject to revision, and parties to agreements based on this part of ISO 9184 are encouraged to investigate the possibility of applying the most recent edition of the standard indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 9184-1:1990, *Paper, board and pulps — Fibre furnish analysis — Part 1: General method.*

3 Principle

Fibres are stained with Graff "C" stain and examined under the microscope.

4 Reagents

CAUTION — Some of the components used in preparing this stain are toxic. The stain should be prepared and handled in keeping with safe laboratory practice.

Use only reagents of recognized analytical grade and distilled water or water of equivalent purity.

4.1 Aluminium chloride, solution ($\rho = 1,16$ g/ml at 20 °C).

Dissolve about 40 g of aluminium chloride hexahydrate ($\text{AlCl}_3 \cdot 6\text{H}_2\text{O}$) in 100 ml of water.