
**Paper, pulp, and recycling —
Decolouration test of dye coloured
paper products and paper products
printed using dye inks**

Papier, pâte et recyclage — Essai de décoloration des produits papier colorés en masse et des produits papier imprimés au moyen d'encre à colorants



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Published in Switzerland

Contents

Page

Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Symbols and abbreviations	3
5 Principle	3
6 Apparatus	3
6.1 Pulp preparation material	3
6.2 Reductive bleaching with sodium hydrosulphite	3
6.3 Oxidative bleaching with hydrogen peroxide	3
6.4 Preparation of pads	3
6.5 Optical measurements	4
7 Reagents	4
7.1 Reductive bleaching with sodium hydrosulphite	4
7.2 Oxidative bleaching with hydrogen peroxide	4
7.3 Preparation of pads	4
8 Sampling	5
9 Procedure for preparation of pulp for optical measurements	5
9.1 Pulp preparation	5
9.2 Bleaching the pulp	5
9.3 Reductive bleaching with sodium hydrosulphite	5
9.4 Oxidative bleaching with hydrogen peroxide	6
9.4.1 Bleaching conditions	6
9.4.2 Preparing the bleaching liquor	6
9.4.3 Bleaching	7
10 Procedure for preparation of filter pads	7
11 Conditioning of the filter pads for the measurements	8
12 Optical measurements and calculating the decolouration index	8
12.1 Measurement conditions	8
12.2 Measurements	8
12.3 Calculating the decolouration index	8
13 Test Report	9
Annex A (informative) Sodium hydrosulphite titration	10
Annex B (informative) Peroxide titration	12
Bibliography	14

Foreword

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This document was prepared by Technical Committee ISO/TC 6, *Paper, Board and Pulps*.

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

Large scale recycling of paper and board is now used worldwide since recycled fibres make up approximately half of the fibre resources needed for global production.

Graphic paper products, such as newspapers, magazines, office paper, etc., are approximately one third of the paper recycled in Europe, being about to 15 million tons. They are normally recycled by using a deinking process, for removal of printing inks. The basic feature is the detachment of the ink film from the substrate, its fragmentation into a suitable particle size and its removal from the pulp slurry. The latter is done predominantly by flotation, in special cases substituted by a washing process. For higher qualities of the deinked pulps, deinking is complemented by oxidative and/or reductive bleaching in order to further enhance the optical properties.

The quality of the pulp obtained is characterized by its brightness/colour, cleanliness, mechanical properties and ash content. It depends both on the type of paper and board for recycling being recycled and the treatment applied.

A very small percentage of graphic paper products is produced using dye inks and dyed papers, which are typically not able to be removed by deinking, but can be brightened and decoloured in the bleaching stage(s).

This document provides a laboratory test method for the decolouration capability of products, thus allows assessing a dyed paper or a graphic product printed with dye inks. On industrial scale, bleaching can act as a supplement to deinking but not as a substitute. The major reason is that raw material for deinking is nearly always a mix of paper grades and printing as well as converting technologies. Bleaching is only effective for a small portion of it.

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WARNING — Use of this document can involve hazardous materials, operations and equipment. This document does not purport to address all the safety problems associated with their use. It is the responsibility of the user of this document to take appropriate measures to ensure the safety and health of personnel prior to application of the document and to determine the applicability of any restrictions for this purpose.

1 Scope

This document defines a method for measuring the decolouration capability of commercial products, produced using paper and board dyed in mass and/or printed with dye inks.

This document does not apply to paper printed with pigment inks.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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

ISO 638, *Paper, board and pulps — Determination of dry matter content — Oven-drying method*

ISO 2469, *Paper, board and pulps — Measurement of diffuse radiance factor (diffuse reflectance factor)*

ISO 5269-2, *Pulps — Preparation of laboratory sheets for physical testing — Part 2: Rapid-Köthen method*

ISO 5635, *Paper — Measurement of dimensional change after immersion in water*

ISO 5637, *Paper and board — Determination of water absorption after immersion in water*

ISO 8787, *Paper and board — Determination of capillary rise — Klemm method*

ISO/TR 10688, *Paper, board and pulps — Basic terms and equations for optical properties*

ISO 11475, *Paper and board — Determination of CIE whiteness, D65/10 degrees (outdoor daylight)*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>