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Recycled pulps — Estimation of stickies and plastics —

Part 3: Determination and identification by applying near-infrared measurement

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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

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

A list of all parts in the ISO 15360 series can be found on the ISO website.

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.

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Introduction

Tacky particles, commonly named stickies, are a major issue in paper recycling since they can affect the processes as well as the quality of the recycled products. Therefore, a variety of test methods have been developed over decades. Existing laboratory test procedures for sticky contaminants in pulps made from paper for recycling or in recycled papers require an elaborate sample preparation to increase the concentration of these sticky contaminants by screening the pulp through a slotted plate and analysing the rejects. With the test procedure and equipment based on this document, the content of sticky contaminants can be determined at a laboratory handsheet or at the paper by means of near-infrared (NIR) measurement but also on filter paper where stickies have been concentrated and deposited with existing test procedures.

The approach to the measurements specified in this document is different from established test methods because the amount and chemical composition of polymeric substances are determined by applying NIR measurements. The content of these substances, which are typical constituents of adhesives are assigned as stickies. This is a further major difference from existing methods, which typically analyse the sticky behaviour, but not the chemical composition. The results determined by applying the method specified in this document correlate very well with established sticky measurement techniques, e.g. ISO 15360-2 or INGEDE Method 4.[1] The measurement procedure in this document also enables to simultaneously analyse polymeric substances without tacky behaviour, typically called “plastics” in other methods.

The method described here can be implemented by any system that combines particle size measurement and NIR analysis. For example, “3DStick”[2,3] involves laser triangulation to determine size and location of particles and subsequent NIR to determine chemical composition. Alternatively, direct camera imaging in the NIR spectrum has been used to both locate and identify the chemical composition of particles.[4] This method can prove valuable for online measurement in systems that generate dry sheet samples[5].

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Recycled pulps — Estimation of stickies and plastics —

Part 3:
Determination and identification by applying near-infrared measurement

1 Scope

This document specifies a method for the determination of stickies and non-tacky polymeric contaminants present in pulp or paper sheets near-infrared measurement. This document is applicable to recycled pulps and papers.

Sampling of pulp and paper as well as the preparation of handsheets are outside the scope of this document.

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 216, *Writing paper and certain classes of printed matter — Trimmed sizes — A and B series, and indication of machine direction*

ISO 534, *Paper and board — Determination of thickness, density and specific volume*

ISO 536, *Paper and board — Determination of grammage*

ISO 4119, *Pulps — Determination of stock concentration*

ISO 5263-2, *Pulps — Laboratory wet disintegration — Part 2: Disintegration of mechanical pulps at 20 degrees C*

ISO 5269-1, *Pulps — Preparation of laboratory sheets for physical testing — Part 1: Conventional sheet-former method*

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

ISO 5270, *Pulps — Laboratory sheets — Determination of physical properties*

ISO 15360-1, *Recycled pulps — Estimation of Stickies and Plastics — Part 1: Visual method*

ISO 15360-2, *Recycled pulps — Estimation of Stickies and Plastics — Part 2: Image analysis method*

3 Terms and definitions

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

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

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

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