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Graphic technology — Ink, paper and labels — Requirements on hot alkali penetration and resistance

Technologie graphique — Encres, papier et étiquettes — Exigences de pénétrabilité et résistance aux alcalins chauds

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Foreword

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The committee responsible for this document is ISO/TC 130, *Graphic technology.*

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Introduction

Bottles or other containers for beverages and soft drinks may be labeled with wet glued printed labels of various substrates. If the bottles and containers are reused, they need to be cleaned thoroughly. Often, bottles and containers are used for different types of drinks. This requires the removal of the labels from the bottles and containers during the cleaning process. Usually, hot alkaline solution is used within the cleaning facilities. To ensure the stability of the process, the penetration of the cleaning solution through the label needs to occur rapidly. In addition, the labels need to stay intact to ease the process of removing them from the cleaning agent. Also, no dying of the solution must occur so as to minimize costs for the waste treatment of the cleaning solutions after neutralization. The test methods given in this International Standard have been successfully applied in the European beverage industry for decades and are also standardized as DIN Standards.

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Graphic technology — Ink, paper and labels — Requirements on hot alkali penetration and resistance

1 Scope

This International Standard specifies test methods for

— penetrability and removal times of labels that have been wet glued on bottles intended to be refilled and reused, and

— resistance of printed labels against hot alkaline solution.

Test results always deal with systems comprising of substrates, ink films and varnish films if present. This International Standard is valid for label substrates and printed labels. Label substrates include metalized papers. The test procedures are also valid for the evaluation of inks and papers to be used in printing labels.

This International Standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this International Standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

2 Terms and definitions

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

2.1
penetration time
time of travel for a liquid through a substrate

2.2
removal time
time of separation of a glued label from a glass substrate

2.3
thymolphthaleine
organic chemical compound that is employed as an acid-base indicator, changing in appearance from red to yellow to blue as the pH changes from acidic (low pH) to neutral (pH = 7) to basic (high pH)

2.4
wire bar
coating device consisting of a metal rod covered with a tightly wound wire, in which the applied coating thickness is a function of the diameter of the wire (also known as a wire-wound rod)

3 Principle

Labels of bottles intended to be refilled and reused are removed from the bottles by applying hot alkaline solution.

3.1 Test method for the penetration time of hot alkaline solution on labels

To test if the hot alkaline solution is able to penetrate printed labels or label substrates from bottles within a required time, a glue, containing thymolphthalein solution is applied on the glue side of the label, the label is then glued onto the bottom of a petri dish and the dish is brought into contact with the hot alkaline solution. Appearance of a blue colour indicates the penetration of the hot alkaline solution

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