
**Paper, board and printing inks –
Printability – Laboratory test method
for offset ink setting**

*Papier, carton et encres d'impression – Imprimabilité – Méthode
d'essai de laboratoire pour le séchage de l'encre offset*

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Foreword

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Introduction

This document describes a test method to evaluate the ink setting characteristics of a specific ink/substrate combination in offset lithographic printing.

Set-off is the transfer of ink from the front of one sheet to the back or the front of the next sheet.

Setting is the process of penetration of liquid ink components of low viscosity into the penetrable substrate. These low-viscosity liquids within the ink are mineral oils, vegetable oils or esters of vegetable oils. By separation from those low-viscous liquids, the remaining ink film solidifies. This is combined with a varying change in the surface tack depending on the inks-varnish system and the time. The surface tack usually increases at the begin of the setting and later-on drops to zero. Setting is either the main drying mechanism for ink systems (e.g. news inks) or part of a multi-channel drying mechanism (e.g. conventional sheet fed offset inks or heatset inks). The laboratory test for setting performs a set-off print of the fresh print to a non-printed substrate at defined times. The ink transfer to the non-printed substrate not only depends on the degree of solidification of the ink by setting, but also on the actual level of tack of the original ink film. Thus, the test result is a combined measure.

The absorption properties of the paper are of great influence in offset lithography printing. Inappropriate absorption can lead to numerous printing problems such as ink set-off, bad adhesion, mottling, unpredictable tone value increase, poor rub resistance, damaging of first printed side on perfecting presses after perfecting and others.

The more absorbent the paper is, the less time will be needed for the ink to set sufficiently for further processing, but other properties can be affected adversely by fast ink setting. Very short times should be used when testing the processing of wet sheets, e.g. in a perfector press. Longer times are used for paper handling right after printing, and very long times are used for further processing such as folding and cutting.

Depending on the purpose of the test, there are three options for the paper-ink combination:

- Reference ink on production paper;
- Production ink on reference paper;
- Production ink on production paper, which can be divided into the following, depending on the application of the print:
 - Set-off face-to-face (e.g. set-off after folding);
 - Set-off face to back (e.g. set-off in a stack of paper).