Examination of contemporary plate production and surface texture of flexographic printing plates

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Research Field of Doctoral School

Enlargement of flexographic technology on paper based packaging printing

Chapter No.1 – Studying of the flattop flexographic plate making technologies
Chapter No.2 – Investigation the relationships between the surface texture of flexographic printing plates and the printability of “kraft” paper

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Properties of the Brown Kraft Paper

- Its exclusive mechanical strength means that natural brown sack Kraft paper is adaptable to a wide range of industrial, packaging and processing applications.
- For all relevant uses, natural Kraft papers are certified suitable for food contact, thanks to their pure virgin fibres.
- This range is available in various qualities, all with high mechanical strength thanks to the pure pulp made from unbleached virgin fibres.

Basics of Flattop Plate Making Systems

The steps of digital plate making

Working Principles of the Kodak Flexcel NX, Flint Group NExT and MacDermid Lux Technologies

DuPont™ Cyrel® Digiflow Exposure Unit and Working Principles

The best technology by our tests and experiences
**Dupont™ Cyrel® Digiflow Features & Benefits**

- Optimizes performance of solid screening programs such as Groovy or Microcell
- No additional platemaking steps
- Maximum workflow flexibility
- Improved solid ink densities
- Minimal consumable cost
- Increased color gamut
- No environmental impact
- Easily integrated into existing workflows
- Compatible with all CDI Versions & HD Flexo

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**Tested Plate Materials**

We tested nine different raw materials. These were the products of three different plate-makers (Dupont, Flint Group and MacDermid) with different characteristics and hardness.

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**Target: to increase the density of ink**

**Results with the Flint Group Nyloflex® ACT D plate**

<table>
<thead>
<tr>
<th>Densities</th>
<th>Micro-structures</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACT D</td>
<td>Solid</td>
</tr>
<tr>
<td>100%</td>
<td>MG180</td>
</tr>
<tr>
<td>110%</td>
<td>MG180</td>
</tr>
<tr>
<td>120%</td>
<td>MG180</td>
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<tr>
<td>130%</td>
<td>MG180</td>
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<td>170%</td>
<td>MG180</td>
</tr>
<tr>
<td>180%</td>
<td>MG180</td>
</tr>
</tbody>
</table>

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**Results of the Flint Group Nyloflex® ACT D plate**

![Graph showing results of the Flint Group Nyloflex® ACT D plate]
MOTTLE-EFFECT

Mottle effect actually means fluctuation of density within a small area.

- Depending on ink transfer
- It’s the amount of ink being moved through the components of the printing process and ultimately onto the substrate.
- Visual consistency of an orange peel
- It’s how a mottled image looks like - printed on film.

DIFFERENT SAMPLES OF MOTTLE-EFFECT PRINTED ON BRAUN KRAFT PAPER

CHECKING THE MOTTLE-EFFECT BY PERET EQUIPMENT

FINDINGS – SUGGESTED SETTINGS

- Printed substrate: brown Kraft paper
- Printing machine: Varga Flexo OK-88
- Printing house: Krajcár Packaging Kft.
- Inks used: CNI (Flint Group) solvent
- Plate material: Flint Group ACT D
- Microcell structure: MCWSI
- Laser power: 180%
Thank you for your kind attention!

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