Low Migration Inks
Benefits to Packaging & Our Customers
Qualvis Design

Low Migration & Food Packaging

Contents:

• Technical Investment in Qualvis Ink Lab
• What is Low Migration Ink
• Why the need for low migration ink products?
• Legislation that affects packaging
• How migration can occur into foodstuff
• Barriers that can & cannot prevent migration
• The elements within inks that can migrate
• huber group low migration inks used in Qualvis
• Summary
Technical Investment in Qualvis

Ink Lab:

- Install of Valetech ink dispenser - control & consistency of colour on every print job
  - Dispenses all spot colour inks mechanically & digitally
  - accurate to one thousandth of a gram
  - Spectrally read to QC colour tolerance

- Move to be a fully 100% Low Migration site
  - All 4 colour, spot colours & coatings now LM
  - 2 presses running solely LM inks & coatings
  - Jan 2016 QPPL fully Low Migration production site
What is Low Migration Printing Ink

EuPIA Definition

A “low migration ink” designed for use on food packaging is formulated using selected components ensuring that migration from the resulting printing ink film is intrinsically within official migration limits for intended application. This should be supported by relevant analytical testing and/or relevant worst case calculations.
Why the Need for Low Migration Products

- The raw materials used in standard printing inks have not changed
- Legislation has changed – from 2004, guidance relating to migration taken more seriously
- Authorities & brand owners have become more aware of possible issues - increased level of testing
- Test methods have become more sophisticated
- Public demands for “safe” packaging – Needs to give brand protection
Why the Need for Low Migration Products

- Brand Protection
- Legislation Compliance
Food Packaging Legislation

Legislation – EU Regulation 1935/2004

Article 3 Food packaging shall be manufactured so that, under normal or foreseeable conditions of use, they do not transfer their constituents to food in quantities which could:

- (a) endanger human health;
- (b) bring about an unacceptable change in the composition of the food;
- (c) or bring about a deterioration in the organoleptic characteristics thereof.
Commission Regulation (EC) No 2023/2006 of 22 December 2006 on good manufacturing practice for materials and articles intended to come into contact with food:

- Effective quality system
- Starting materials in compliance with pre-established specifications
- Migration or invisible set-off of components of printing inks shall not exceed the limits
- No direct contact of printed surface with food
Food Packaging Legislation

Legislation – Swiss Ordinance 817.023.21

• Printing inks should contain only substances from the inventory list (list A evaluated and list B non-evaluated raw materials)

• Non-evaluated raw materials (B) can be used when migration can be avoided (migration < 10 ppb (parts per billion))

• GMP ink production and printing

• Most of the raw materials used in printing inks are not evaluated for food contact, therefore the migration limit < 10 ppb can only be fulfilled by low migration products
How Migration Can Occur

- Through print ink transfer (migration) through substrate
How Migration Can Occur

- Through invisible ink set-off / transfer from flat printed sheet – this then comes into contact with foodstuff in the carton
How Migration Can Occur

- Transfer from print into enclosed space
Barriers to Prevent Harmful Transfer

- (Glass, metal, aluminium foil - over 7μm) – Classed as a Permanent Barrier

- (Paper, board, PE-coated materials) – Classed as a Non Barrier

- (Plastic Film) Need information from film supplier and/or appropriate testing/risk assessment - Classed as a Functional Barrier

The only acceptable way of preventing migration with standard UV inks is to use a PERMANENT BARRIER
The Elements Within Inks That Can Migrate

The potential for migration – UV inks:

<table>
<thead>
<tr>
<th>Component</th>
<th>%</th>
<th>Potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pigment</td>
<td>1 – 20</td>
<td>-</td>
</tr>
<tr>
<td>Oligomers (Binder)</td>
<td>70 – 90</td>
<td>-</td>
</tr>
<tr>
<td>Monomers</td>
<td>2 – 10</td>
<td>Yes</td>
</tr>
<tr>
<td>Photo-Initiators</td>
<td>3 – 8</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Additives:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waxes</td>
<td>1 – 2</td>
<td>-</td>
</tr>
</tbody>
</table>
Low Migration Inks Used Within Qualvis

Huber Low migration ink series.

Replacement of potential migratory ingredients with high molecular weight components that do not migrate.

Designed for primary food packaging, taking into account relevant requirements like the Regulation (EC) No. 1935/2004 and the Swiss ordinance for consumer goods (SR 817.023.21).
Low Migration Inks Used Within Qualvis

Benefits of our Low migration ink series:

- Analytical assessment of all raw materials.
- Consideration of raw material impurities.
- 100% analytical quality control.
- Sealed containers.
- Guaranteed traceability & batch control.
Summary

Low migration ink series.

- You need low-migration products to meet EU regulations and for brand protection.

- Standard Inks have low molecular weight, low viscosity and drying components of inks have the potential to migrate.

- Low migration inks replace these materials with high molecular weight and evaluated substances.

- The printed surface even with LM inks should not come into direct contact with the food. Use a foodgrade laminate