Joncryl® FLX 5201 – New water-based lamination ink vehicle for food packaging

Printing, Packaging & Adhesives
**Joncryl® FLX 5201**

**Main Applications**

- A polyurethane dispersion for water based lamination inks for the flexible packaging market.

- Designed for medium duty lamination whites and color inks on:
  - Candy, snack bags.
  - Freezer bags.
  - Dried food packaging.

- Printing and lamination on versatile selection of films:
  - PE, OPP, PET, OPA (nylon)

- Laminated with 2K solvent less and water-based adhesives.
Joncryl® FLX 5201 is an aliphatic polyurethane dispersion for use in lamination inks for food packaging applications

Key features & benefits
- Excellent lamination bond strength
- Good printability and resolubility
- Good block resistance
- Swiss List compliant for food packaging

Typical Characteristics
- **Appearance**: opaque emulsion
- **Molecular weight (Mw)**: > 200,000
- **Non-volatile**: 40%
- **pH**: 8.5
- **Viscosity at 25°C** (Brookfield #3 LVF, 30 rpm): 100 cps
Especially suitable for water based lamination inks, offering:

- High lamination bond strength on a range of substrates:
  - BOPP and PET; chemically treated and corona treated, and OPA (nylon).
- Excellent resolubility.
- Good substrate wetting.
- Good compatibility with Joncryl® HPD based pigment concentrates.
- Designed for food packaging applications.

Very effective in combination with Joncryl® FLX 5000-A to optimize:

- Lamination bond strength vs. blocking properties.
- Printability and resolubility.
- Ink cost.
# Joncryl® FLX 5201

## Ink Formulations – Opaque Whites

### White Pigment Concentrate

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>RDI/s TiO2</td>
<td>75.0</td>
</tr>
<tr>
<td>Tego Foamex 810</td>
<td>0.5</td>
</tr>
<tr>
<td>Tego Dispers 750W</td>
<td>7.5</td>
</tr>
<tr>
<td>Water</td>
<td>17.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

### Whites – Various ratios of Joncryl® FLX 5201: Joncryl FLX 5000-A

<table>
<thead>
<tr>
<th>Blend Ratios</th>
<th>100:1</th>
<th>75:25</th>
<th>50:50</th>
</tr>
</thead>
<tbody>
<tr>
<td>75% TiO2 dispersion</td>
<td>40.0</td>
<td>40.0</td>
<td>40.0</td>
</tr>
<tr>
<td>Joncryl® FLX 5201</td>
<td>56.4</td>
<td>44.3</td>
<td>28.2</td>
</tr>
<tr>
<td>Joncryl® FLX 5000-A</td>
<td>--</td>
<td>14.1</td>
<td>28.2</td>
</tr>
<tr>
<td>Isopropanol</td>
<td>3.0</td>
<td>3.0</td>
<td>3.0</td>
</tr>
<tr>
<td>Joncryl® Wax 4</td>
<td>0.2</td>
<td>0.2</td>
<td>0.2</td>
</tr>
<tr>
<td>Anti-foam</td>
<td>0.3</td>
<td>0.3</td>
<td>0.3</td>
</tr>
<tr>
<td>Wetting agent</td>
<td>1.0</td>
<td>1.0</td>
<td>1.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100.0</strong></td>
<td><strong>100.0</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

Surfactant based white dispersions are recommended.

Wetting agents may be utilized to improve wetting on difficult-to-wet substrates.

Add as needed to adjust viscosity.

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>100:1</th>
<th>75:25</th>
<th>50:50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rheovis® PE 1320</td>
<td>0.3</td>
<td>0.9</td>
<td>0.8</td>
</tr>
</tbody>
</table>
**Joncryl® FLX 5201**

*Ink Formulations – Colors*

<table>
<thead>
<tr>
<th>Colors – Recommended ratios of Joncryl® FLX 5201: Joncryl® FLX 5000-A</th>
<th>100:0</th>
<th>75:25</th>
<th>50:50</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Blend Ratios</strong></td>
<td><strong>Pigment Dispersion</strong></td>
<td>40.0</td>
<td>40.0</td>
</tr>
<tr>
<td></td>
<td><strong>Joncryl® FLX 5201</strong></td>
<td>56.4</td>
<td>43.0</td>
</tr>
<tr>
<td></td>
<td><strong>Joncryl® FLX 5000-A</strong></td>
<td>--</td>
<td>13.6</td>
</tr>
<tr>
<td></td>
<td><strong>Isopropanol</strong></td>
<td>3.0</td>
<td>3.0</td>
</tr>
<tr>
<td></td>
<td><strong>Joncryl® Wax 4</strong></td>
<td>0.2</td>
<td>0.2</td>
</tr>
<tr>
<td></td>
<td><strong>Anti-foam</strong></td>
<td>0.3</td>
<td>0.3</td>
</tr>
<tr>
<td></td>
<td><strong>Wetting agent</strong></td>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100.0</strong></td>
<td><strong>100.0</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

**Add as needed to adjust viscosity**

| Rheovis® PE 1320 | 1.1 | 0.8 | 0.3 |

In general, higher amount of Joncryl® FLX 5201 improves lamination bond strength, blocking resistance and curing in the reel. Higher amount of Joncryl® FLX 5000-A improves printability and resolubility properties.
Joncryl® FLX 5201

Resolubility

Before stop

After 20 prints

After 40 prints

After 200 prints

Joncryl® FLX Resolubility

Poor Resolubility
Joncryl® FLX 5201
Lamination Bond Strength

Laser Confocal Scanning Microscopy:

- No diffusion of adhesive into ink
- No/Low Lamination Bond strength

- Diffusion of adhesive into ink
- Good Lamination Bond strength

*Adhesive penetration into the ink layer(s) important for bond strength*
**Joncryl® FLX 5201**

*Value for the printer/convertor*

### Polymer Properties
- Good compatibility with ink additives.
- Wide range of pigment dispersion options.
- Stable viscosity.

### Ink Properties
- Greater formulation flexibility - optimize ink formulations.
- Good color strength and stability - utilize either surfactant or resinated pigment dispersions.
- Good Resolubility - slow solvents or organic amines not required.

### Values for Printer / Converter
- Good press resolubility.
- High bond strength with 2K and water-based adhesives.
- Good adhesion to a wide range of substrate combinations.
- Inks can be used for food packaging.
Contact your BASF representative for further information about Joncryl® FLX 5201

Thank You!

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Flexible Packaging Inks
Quality you can see, properties you can rely on

BASF
We create chemistry
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