BYK-P 4100 – A Unique Additive
to Improve Processing of
PVC Calendering Applications

• highly efficient release properties
• improved spreading coefficient
• free of silicones and waxes
• complies with EU-Dir 2002/72/EC and FDA § 175.300
**BYK-P 4100**

**A Unique Additive to Improve the Processing of PVC Calendering Applications**

What does “Improving the Processing of PVC Calendering”, mean?
- better spreading
- better printability
- no or low plate out
- improved release characteristics
- better workability

**Additional Benefits of BYK-P 4100:**
- no negative influence on intercoat adhesion
- free of silicones and waxes
- FDA § 175.300 and EU-Dir 2002/72/EC compliant

**BYK-P 4100 in Comparison to Commonly used Products**

<table>
<thead>
<tr>
<th></th>
<th>Waxes, Stearates, fatty acid esters</th>
<th>BYK-P 4100</th>
</tr>
</thead>
<tbody>
<tr>
<td>During processing</td>
<td>• incompatible with PVC</td>
<td>• more compatible with PVC</td>
</tr>
<tr>
<td></td>
<td>• good release properties</td>
<td>• excellent release properties</td>
</tr>
<tr>
<td>Surface after processing</td>
<td>risk of migration, resulting in</td>
<td>The surface active polar groups of BYK-P 4100 provide a better spreading coefficient resulting in</td>
</tr>
<tr>
<td></td>
<td>• poor printability</td>
<td>• improved printability</td>
</tr>
<tr>
<td></td>
<td>• bad intercoat adhesion</td>
<td>• no influence on intercoat adhesion</td>
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</tbody>
</table>

**Comparison of Mechanism**

![Comparison of Mechanism](image1)

- Polar groups
- PVC compatible groups

![Comparison of Mechanism](image2)
A good Spreading gives an Excellent Printability when Aqueous Printing Inks are used.

BYK-P 4100 is Highly Efficient
Even if the BYK-P 4100 dosage is reduced drastically over conventional products (like waxes, stearates, fatty acid esters) the melt flow of the PVC compound is stable.

Rigid PVC

<table>
<thead>
<tr>
<th>Sample</th>
<th>Temperature in °C</th>
<th>torque [N/m]</th>
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</thead>
<tbody>
<tr>
<td></td>
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<td>200</td>
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<tr>
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<td>110</td>
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<tr>
<td></td>
<td></td>
<td>60</td>
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Conventional fatty acid ester 0.2 phr (100%)
BYK-P 4100 0.1 phr (50%)
Sample Temperature in °C

Plastisized, Filled PVC

<table>
<thead>
<tr>
<th>Sample</th>
<th>Temperature in °C</th>
<th>torque [N/m]</th>
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<td></td>
<td>30</td>
</tr>
</tbody>
</table>

Conventional PE-wax/stearate 2.5 phr (100%)
BYK-P 4100 0.6 phr (25%)
BYK-P 4100 2.5 phr
Sample Temperature in °C

Recommendations for the first trials
• calculate the complete amount of release and processing agents (waxes, fatty acid esters) and divide this sum by two.
• depending on the first results the additive dosage may even be reduced!
• although the surface tension not always shows an increase there will be an improvement in spreading because BYK-P 4100 influences the polarity of the surface.

How to start when using BYK-P 4100
BYK-P 4100 is used in dosages between 0.1% and 1.0%. In filled or pigmented formulations up to 2.0%, depending on the effect that is desired.

Release       Improved spreading and printability      Anti-blocking
0.1%          >1.0%                                   

In filled or pigmented formulations up to 2.0%
Additives and Applications

BYK Additives

Additives are used during the production of coatings, printing inks and plastics to optimize the production process and to improve the quality of the final product.

Product Range Additives
- Additives to improve surface slip, leveling and substrate wetting
- Adhesion promoters
- Defoamers and air release agents
- Foam stabilizers
- Processing additives
- Rheological additives
- UV-absorbers
- Viscosity depressants
- Waxes
- Wetting and dispersing additives for pigments and extenders

Application Areas
- Ambient curing resins (FRP)
- Architectural coatings
- Automotive OEM
- Automotive refinishes
- Can coatings
- Coil coatings
- Color masterbatches
- Industrial coatings
- Leather coatings
- Marine paints
- Molding compounds
- Paper coatings
- Pigment concentrates
- Polyurethane foams
- Powder coatings
- Printing inks
- Protective coatings
- PVC plastisols
- Thermoplastics
- Wood and furniture coatings

BYK Instruments

BYK offers a complete line of testing instruments to meet your needs in many application areas:
- Gloss/Appearance
- Color

Portable or stationary laboratory equipment – including easy to use quality control software.

BYK instruments – the complete solution for the coatings and plastics industry.

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