Extrusion coating is a versatile coating technique used for the economic application of various plastics onto substrates, such as paper. Conventional paper coating utilizes low-density polyethylene (LDPE), but LDPE has several drawbacks: use of non-renewable resources, lack of biodegradability and difficulties in recycling. In contrast, biopolymers such as polylactic acid (PLA) are biobased, maintain biodegradability and do not interfere with the paper recycling process.

With VINNEX®, WACKER offers polyvinyl acetate (PVAc) based resins that can considerably improve the mechanical properties and the processing performance of biopolymesters in the extrusion coating of paper, making them better substitutes for conventional LDPE.

**Improved Processing Performance through Reduced Necking**

Conventional PLA has a relatively low melt strength which can cause problems during extrusion paper coating. Necking causes uneven distribution of the film on the substrate material.

Adding VINNEX® 2525 increases the melt strength resulting in significantly reduced necking during extrusion coating. In cases where both improved necking and heat-sealing properties are desired, VINNEX® 2523 is the right choice.

---

**Product Recommendations and Properties**

<table>
<thead>
<tr>
<th>Product</th>
<th>Necking</th>
<th>Heat sealing</th>
<th>Tack</th>
<th>Composition</th>
<th>Form</th>
<th>Tg [°C]</th>
<th>Density [kg/m³]</th>
<th>Bulk density [kg/m³]</th>
<th>MFR melt index [cm²/10 min]</th>
<th>Use level [%]</th>
<th>Food contact</th>
</tr>
</thead>
<tbody>
<tr>
<td>VINNEX® 2522</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>PVAc</td>
<td>Beads</td>
<td>42</td>
<td>1,180</td>
<td>550 – 800</td>
<td>21.9²</td>
<td>5 – 10</td>
<td>Yes</td>
</tr>
<tr>
<td>VINNEX® 2523</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>PVAc</td>
<td>Micro-Pellets</td>
<td>43</td>
<td>1,180</td>
<td>700 – 850</td>
<td>7.0¹</td>
<td>10 – 20</td>
<td>Yes</td>
</tr>
<tr>
<td>VINNEX® 2525</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>PVAc</td>
<td>Micro-Pellets</td>
<td>44</td>
<td>1,180</td>
<td>700 – 850</td>
<td>15.4³</td>
<td>10 – 20</td>
<td>Yes</td>
</tr>
</tbody>
</table>

- Strong positive effects
- Positive effects
- No effect

¹ Suitable for food contact according to the EU regulations for Food Contact and FDA (US Food and Drug Administration, §§175.105, §175.300, §176.170 and §176.180)
² MFR melt index measured at 130 °C / 2.16 kg / 2 mm
³ MFR melt index measured at 150 °C / 2.16 kg / 2 mm
⁴ MFR melt index measured at 150 °C / 21.6 kg / 2 mm

Note: These figures are intended as a guide and should not be used in preparing specifications.

VINNEX® is a registered trademark of Wacker Chemie AG.
Improved Heat Sealability
Sealing of conventional PLA films is difficult and leads to a weak seal bond strength. This can cause severe problems in applications where seal bond strength is crucial, such as paper cups. For acceptable seal bond strength, the sealing temperature must be much higher than that for conventional LDPE. However, higher temperatures and longer sealing times are often not possible or else significantly reducing throughput in standard equipment.

VINNEX® 2522 is ideal for improving heat-sealing properties. If necking is also a concern, we recommend VINNEX® 2523.

Improved Tack for Better Adhesion to Paper Substrates
Conventional PLA has relatively low tack and consequently does not adhere well to substrate surfaces. This leads to lower throughput and difficulties during extrusion coating.

Adding VINNEX® resins can significantly increase the tack of the coating, thereby enabling a smooth, fast production process. Where tack is the major concern, we recommend using VINNEX® 2522. VINNEX® 2523 may also be used to improve the tack.

Biodegradability of Biopolymesters Can be Maintained
Various blends of biopolymesters with WACKER’s polyvinyl acetate resins have already passed the industrial composting test (ISO 14855 or EN 13432). As with every bioplastic compound, biodegradation largely depends on the formulation and has to be determined case by case. For more detailed information, please contact our technical service.