

# Technical information of 4films resist bio



## Description

Matt and scratch resistant surface with excellent taste, aroma and fat barrier properties, sustainable film based on biopolymer (polylactic acid, PLA), compostable (DIN EN 13432).

## Characteristic

Very high yield, reducing packaging and converting equipment downtimes and material waste, transportation and warehousing costs. Strong and air tight gusset and fin seals. Low seal initiation temperature.



Properties	Test Method / Standard	Value	Unit
<b>Thickness</b>	DIN EN ISO 534	24	µm
<b>Substance / Grammage</b>	DIN EN ISO 534	27.5	g/m <sup>2</sup>
<b>Yield / Density</b>	ASTM D 792	36.36	m <sup>2</sup> /kg
<b>Tensile strength at break MD</b>	ASTM D 882	-	N/mm <sup>2</sup>
<b>Tensile strength at break TD</b>	ASTM D 882	-	N/mm <sup>2</sup>
<b>Elongation at break MD</b>	ASTM D 882	-	%
<b>Elongation at break TD</b>	ASTM D 882	-	%
<b>Shrinkage MD</b>	DIN 53377	-	%
<b>Shrinkage TD</b>	DIN 53377	-	%
<b>Gloss 60° / 60°</b> Angle of incidence / observation	ASTM D 2457	5 – 6	GU
<b>Haze</b>	ASTM D 1003	-	%
<b>Transparency</b>	ASTM D 1003	-	%
<b>Coefficient of friction COF</b>	DIN EN ISO 8925	-	-
<b>Surface tension</b>	DIN EN ISO 55660-2	> 42	mN/m

**Prior to each and any treatment or processing of the film, the customer is obliged to perform pre-tests under original production conditions in accordance with the form sheet "Processing recommendations".** Damages resulting from the fact that the customer did not or not properly carry out such mandatory pre-tests shall be borne by the customer.

The details contained in this bulletin comply with the current state of our know-how; they do not constitute any extension of the guaranteed services stipulated in our delivery conditions and are in particular no warranted properties. This information sheet can only provide non-binding advice.

### Explanation of Abbreviations

ASTM: American Standard Test Method · DIN EN ISO: German, European and International Standard  
GU: Gloss Units · MD: Main Direction · TD: Transverse Direction



# Processing recommendations

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Prior to any treatment or processing of 4films laminating films they must be tested in each case under the original conditions of production. Due to the great variety of processing machines and their adjustment parameters as well as the variety of materials on the market only recommendations are possible here.

4films laminating films should have preferably a temperature between 10 °C and 45 °C and a humidity of  $55 \pm 5$  % in storage areas. Storage at high temperatures or in a horizontal position should be avoided. The material should be consumed within three months of receipt.

To avoid damage or consequential costs, the customer has to ensure that when laminating with 4films-laminating films in the event of any defects occurring in the film (e.g. wrinkling, stains, spots or other imperfections) the production has to be stopped immediately.

When using 4films laminating films, it has to be verified throughout each job that a sufficient compound adhesion to the substrate to be laminated exists. In case of insufficient compound adhesion, processing parameters such as pressure, machine speed and temperature should be varied.

In the case that the surface wettability of the substrate to be laminated is particularly poor, the customer might be required to improve the surface wettability beforehand, for instance, without limitation, by use of a corona treatment or to use another laminating procedure.

Prior to any treatment or processing of 4films laminating films in the following methods:

- .. UV varnishing
- .. hot foil stamping
- .. cold foiling
- .. adhesive bonding
- .. creasing
- .. grooving
- .. blind embossing
- .. die cutting
- .. pocket sealing
- .. pocket welding

generally, a suitability test must take place using the original materials under original conditions.





# Processing parameters

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Detailed laminating tests were performed.  
Thereby the following processing parameters were determined.

### Lamination on Billhöfer EK 76

<b>Lamination roller</b>	70 - 80 °C
<b>Airjet</b>	90 °C
<b>Max. processing speed</b>	30 - 40 m/min
<b>Adhesive application</b>	9 - 10 g/m <sup>2</sup>

### Lamination on Steinemann Aqua

<b>Dry roller</b>	50 °C
<b>Lamination roller</b>	70 - 80 °C
<b>Airjet</b>	90 °C
<b>Max. processing speed</b>	30 - 40 m/min
<b>Adhesive application</b>	9 - 10 g/m <sup>2</sup>

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