

# VINNEX® 8880

## Improved Performance for Transparent PLA Films

Poly(lactic acid) (PLA) is currently the most important biopolymer for producing biobased/biodegradable transparent films. The material is highly transparent, has an appealing gloss and biodegrades under typical industrial composting conditions. Nevertheless, current mechanical and processing properties of PLA are still hampering replacement of bulk thermoplasts. For many applications, the loud “metallic” crackling sound of PLA films is problematic. With VINNEX® 8880, WACKER offers a novel modifier that can considerably improve PLA performance and its noise profile, making it a better substitute for conventional plastics.

### VINNEX® 8880 Improves Mechanical Properties

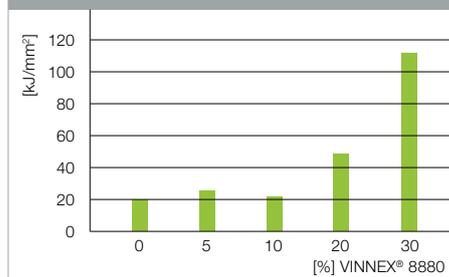
One of the major drawbacks of PLA is its brittleness. Addition of 20–40% VINNEX® 8880 considerably reduces the E-modules and improves the impact strength. Therefore, PLA/VINNEX® 8880 blends perform

much better in most packaging film applications. Furthermore, depending on the concentration, the processing temperature is reduced by 10 °C to 30 °C.

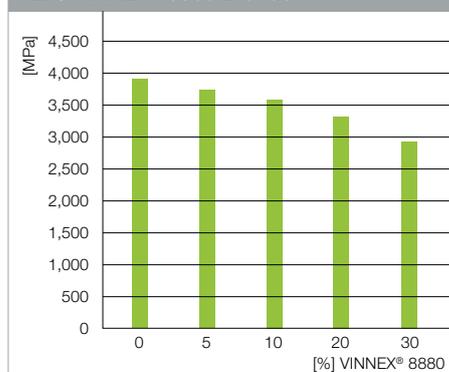
### VINNEX® 8880 Reduces the Noise of PLA Films

Conventional PLA films have a loud “metallic” crackling sound that is undesired for most packaging applications. Addition of VINNEX® 8880 increases flexibility of the material and therefore considerably reduces this noise. To further improve the properties, WACKER has developed a 3-layer cast film in an A-B-A structure to further improve the film properties. The film contains a high VINNEX® 8880 content in the middle layer (B layer), and pure PLA in the outer layers (A layers). The noise of this film is further reduced (comparable or less than PET). The effect is maintained even after stretching (biaxially oriented films).

Impact Strength of Different PLA/VINNEX® 8880 Blends



E-Modulus of Different PLA/VINNEX® 8880 Blends



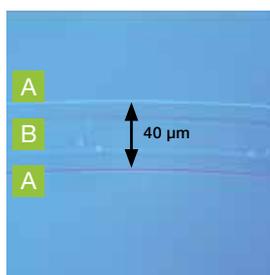
### Properties of VINNEX® 8880

Composition	Vinyl acetate – vinyl laurate copolymer
Form	Pellets
Tg [°C]	21
Density [kg/m³]	1,120
Bulk density [kg/m³]	700–800
MFR melt index* [ccm/10 min]	46.6
Use level [%]	10–40

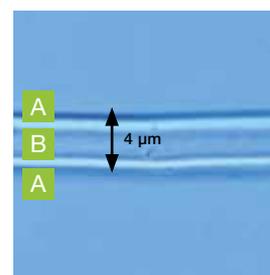
Tg = Glass transition temperature

\* MFR melt index measured at 100 °C / 2.16 kg / 2 mm

### 3-Layer Cast Film with PLA/VINNEX® 8880

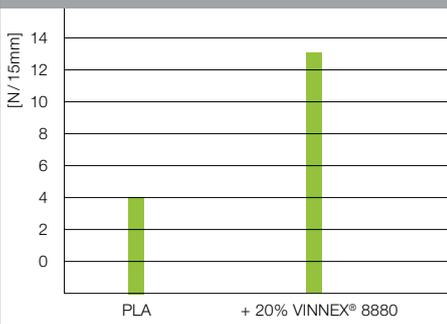


Before stretching



After stretching

**Improved Heat Sealing Properties of PLA/ VINNEX® 8880 Blends**



Seal bond strength of PLA films and PLA/VINNEX® 8880 blends was determined after heat sealing at 100 °C and 1.5 bar for 1 second.

**VINNEX® 8880 Improves Sealability**

Sealing of conventional PLA films is difficult and results in weak seal bond strength. Addition of VINNEX® 8880 can improve sealability both in heat sealing and ultra-sonic sealing on various substrates.

**VINNEX® 8880 Maintains Transparency**

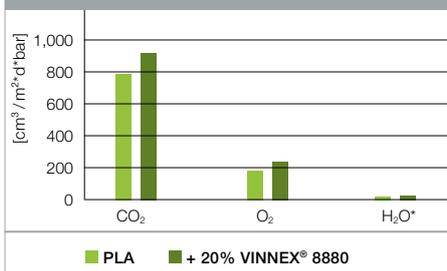
A major advantage of PLA, especially in packaging film applications, is its high transparency and appealing gloss. Addition of VINNEX® 8880 keeps these properties largely unchanged.

**VINNEX® 8880 Maintains Permeability**

PLA has unique permeability properties for CO<sub>2</sub>, O<sub>2</sub> and water vapor which makes it particularly interesting as a functional packing film for fresh fruit, vegetables and bread. PLA/VINNEX® 8880 blends have considerably improved mechanical properties, leaving permeability properties largely unchanged.



**Maintained Permeability of PLA/ VINNEX® 8880 Blends**



\* H<sub>2</sub>O = water vapor permeation

**VINNEX® Maintains Biodegradability**

Various blends of biopolymers with VINNEX® have already passed the industrial composting test (ISO 14855 of EN 13432). As for every bioplastic compound, biodegradation is largely dependent on the respective formulation and has to be determined case by case. For more detailed information, please refer to our technical service.

**At a Glance: Advantages of VINNEX® 8880**

- Recommended for cast and blown film extrusion
- Reduced E-modulus and increased impact strength
- Reduced “metallic” crackling noise
- Improved film sealing properties
- Films can be stretched (biaxially oriented films)
- Transparency and gloss is maintained
- Gas permeability is maintained
- Biodegradability is maintained

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