

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

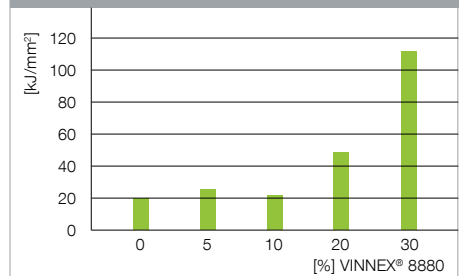
One of the major drawbacks of PLA is its brittleness. Addition of 20–40% VINNEX® 8880 considerably reduces the E-modules and improves the impact strength. Therefore, PLA/VINNEX® 8880 blends perform

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

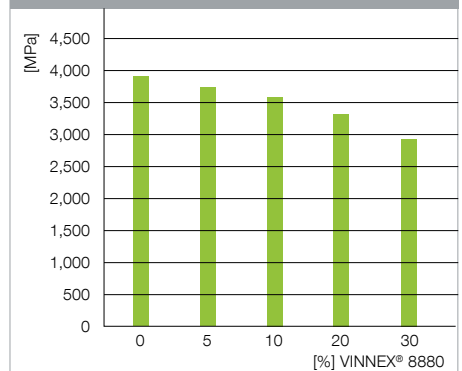
VINNEX® 8880 Reduces the Noise of PLA Films

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



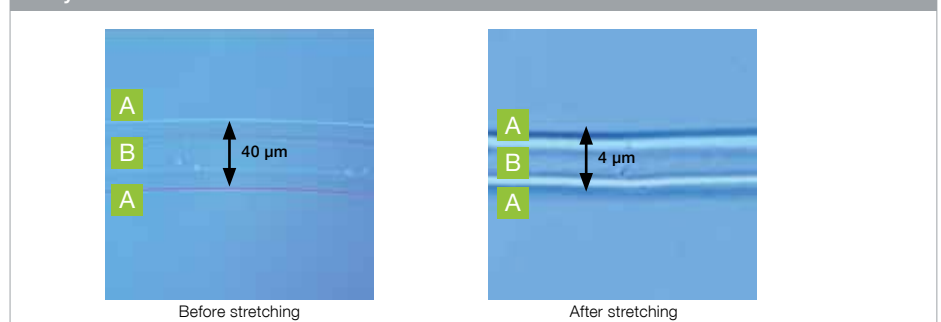
Properties of VINNEX® 8880

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

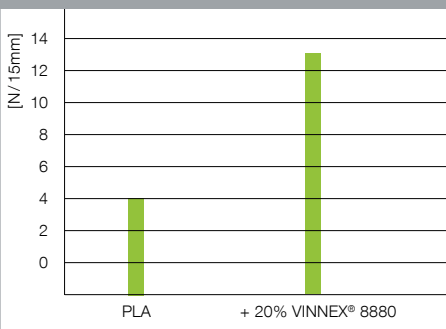
Tg = Glass transition temperature

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

3-Layer Cast Film with PLA/VINNEX® 8880



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

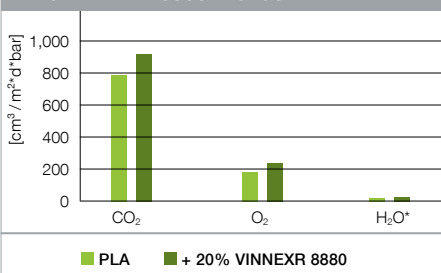
A major advantage of PLA, especially in packaging film applications, is its high transparency and appealing gloss. Addition of VINNEX® 8880 keeps these properties largely unchanged.

VINNEX® 8880 Maintains Permeability

PLA has unique permeability properties for CO₂, O₂ 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



* H₂O = 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

Wacker Chemie AG, Tel. +49 8677 83 3782
 Wacker Chemical Corp., Tel. +1 517 264 8671
 info.biosolutions@wacker.com, www.wacker.com



The data presented in this information sheet are in accordance with the present state of our knowledge but do not absolve the user from carefully checking all supplies immediately on receipt. We reserve the right to alter product constants within the scope of technical progress or new developments. The recommendations made in this information sheet should be checked by preliminary trials because of conditions during processing over which we have no control, especially where other companies' raw materials are also being used. The information provided by us does not absolve the user from the obligation of investigating the possibility of infringement of third parties' rights and, if necessary, clarifying the position. Recommendations for use do not constitute a warranty, either express or implied, of the fitness or suitability of the product for a particular purpose.