

BIOPOLYMERS | VINNEX® RESINS

# VINNEX® – ENABLING A NEW CLASS OF BIOPOLYMER BLENDS

VINNEX® additives are homo-, co- or terpolymers of vinyl acetate that improve the performance and processing of commonly used biopolymers and make them compatible with each other and with natural and mineral fillers.

This allows the formulation of new biopolymer blends with characteristics comparable to traditional polymers while mostly maintaining the biodegradable nature of a biopolyester.

## Starches/TPS

Improved compatibility, mechanical toughness, flexibility

### VINNEX® resins:

VINNEX® 2522, VINNEX® 2523, VINNEX® 2525, VINNEX® 2526, VINNEX® 8880

### VINNEX® powders:

VINNEX® 2501, VINNEX® 2502, VINNEX® 2504, VINNEX® 2505

## PLA

Improved impact strength, melt strength, compatibility, adhesion to paper

### For transparent applications:

VINNEX® 2522, VINNEX® 2523, VINNEX® 2525, VINNEX® 8880

### For opaque applications:

VINNEX® 2501, VINNEX® 2502, VINNEX® 2504, VINNEX® 2505

## PHA/PHB

Enhanced flexibility, compatibility, mechanical toughness, melt strength

### VINNEX® resins:

VINNEX® 2522, VINNEX® 2523, VINNEX® 2525, VINNEX® 2526, VINNEX® 8880

### VINNEX® powders:

VINNEX® 2501, VINNEX® 2502, VINNEX® 2504, VINNEX® 2505

## Natural and Mineral Fillers

Improved compatibility

### VINNEX® powders:

VINNEX® 2501, VINNEX® 2502, VINNEX® 2504, VINNEX® 2505



## CA

Improved compatibility, impact strength

VINNEX® resins and VINNEX® powders

## PBS

Improved compatibility, melt strength, mechanical toughness

### VINNEX® resins:

VINNEX® 2522, VINNEX® 2523, VINNEX® 2525, VINNEX® 2526, VINNEX® 8880

### VINNEX® powders:

VINNEX® 2501, VINNEX® 2502, VINNEX® 2504, VINNEX® 2505

## PCL

Improved compatibility, processability

VINNEX® resins and VINNEX® powders

## PBAT

Improved compatibility, mechanical toughness

### VINNEX® resins:

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### VINNEX® powders:

VINNEX® 2501, VINNEX® 2502, VINNEX® 2504, VINNEX® 2505

**Better Bioplastics with VINNEX® Additives**

In the plastic world, there is no doubt that the strong dependency on petroleum has to be diminished. Accordingly, in the past two decades, many new polymers from renewable feedstocks have been developed. Starch was rediscovered as a plastic material. Polylactic acid (PLA) and polyhydroxyalkanoate/polyhydroxybutyrate (PHA/PHB) produced from sugars and starches have become important raw materials. Still, these biopolymers come with drawbacks: lower material performance, relatively high cost for production and problems in processing inhibit their broad acceptance.

VINNEX® is an additive and enabler which allows the combination of several biopolymers. The resulting performance and processing becomes comparable to traditional polymers or even better thanks to added functionalities.

**At a Glance: Benefits of VINNEX® Blends**

- Improved compatibility with fillers, starch and other biopolyesters
- Improved processability even with conventional equipment
- Increased melt strength
- Improved impact strength
- Enhanced flexibility
- Improved film-sealing performance
- Reduced melt viscosity
- Heat resistance with no need for post-crystallization
- Optimized crystallinity

**Classification of Biopolymers**

Vincotte, a globally recognized certification body, has introduced a nomenclature which makes it easier to recognize the ecological impact of so-called biopolymers. The differentiation between biobased, compostable and biodegradable polymers is especially relevant.

**Biobased Polymers**

Biobased polymers consist to a certain extent of biomass.

The amount is declared via stars:

- \* : between 20 and 40% biobased
- \*\* : between 40 and 60% biobased
- \*\*\* : between 60 and 80% biobased
- \*\*\*\* : more than 80% biobased

**Compostable and Biodegradable Polymers**

Compostable and biodegradable polymers must be degradable by microorganisms, but they are not necessarily biobased. They are classified according to the environmental conditions that are necessary for the degradation process.

**Compostable:** polymer will compost only in industrial composting facilities (at temperatures between 55 °C to 60 °C).

**Home compostable:** polymer will compost at lower temperatures, so it can go into the garden compost heap. In both cases, it is not guaranteed that the process will result in good quality compost.

**Biodegradable in soil:** polymer will completely biodegrade in the soil without adversely affecting the environment.

**Biodegradable in water:** polymer will biodegrade in a natural fresh water environment without adversely affecting it. This does not necessarily apply to marine water.



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