

# VINNAPAS® LL 8251: A NEW LOW-PROFILE ADDITIVE WITH LOW VISCOSITY

Increasing the mechanical strength of a composite part usually means that compounders have to choose formulations with a higher viscosity that are more difficult to process. With VINNAPAS® LL 8251 there is now a solution that combines the excellent mechanical performance of PVAc with a very good viscosity similar to saturated polyester.

### A New Copolymer Grade

VINNAPAS® LL 8251 is a copolymer of vinyl acetate and crotonic acid. It can be used for a wide range of composite processes, e.g. sheet molding (SMC), bulk molding (BMC) and pultrusion applications.

### Low Viscosity

It offers a significantly lower viscosity to the formulator compared to conventional low-profile additives in combination with excellent shrinkage control and high mechanical strength of the final composite part. This allows for easier processing, a reduction of styrene, higher filler loading or easier incorporation of "difficult" fillers and additives.

### For High Solid Formulations

The lower viscosity in styrene allows high-solid formulations. Conventional PVAc low-profile additives can be handled only up to ~40% solid content. VINNAPAS® LL 8251 can be easily handled up to ~55% solid content.

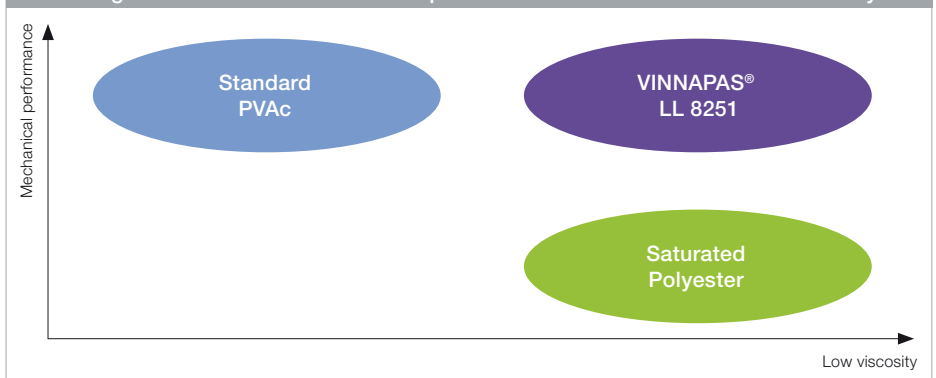
### VINNAPAS® LL 8251: Typical General Characteristics

Viscosity, 10% in ethyl acetate [mPas]*	2.0–2.3
Acid number [mg KOH/g]	6.0–9.0
Volatiles [wt %]	< 0.5
Molecular weight SEC [g/mol]	~ 30,000
K value	~ 25
Tg (DSC) [°C]	~ 37 °C
Viscosity, 40% in styrene [mPas]**	300

\* ASTM D 445-06 [mPas]

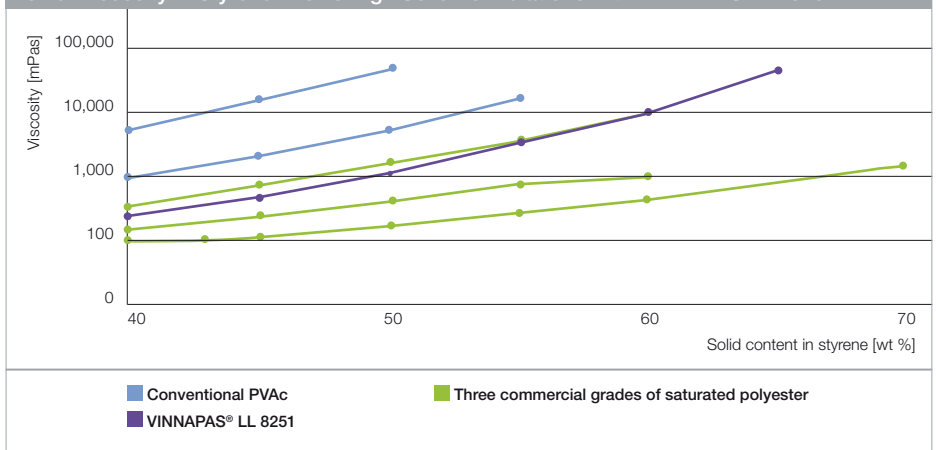
\*\* Brookfield RVT, 23 °C, 20 RPM

### Positioning of VINNAPAS® LL 8251 in Comparison to Standard PVAc and Saturated Polyester



VINNAPAS® LL 8251 combines the mechanical performance of PVAc with a viscosity similar to saturated polyester.

### Lower Viscosity in Styrene Allows High Solid Formulations with VINNAPAS® LL 8251



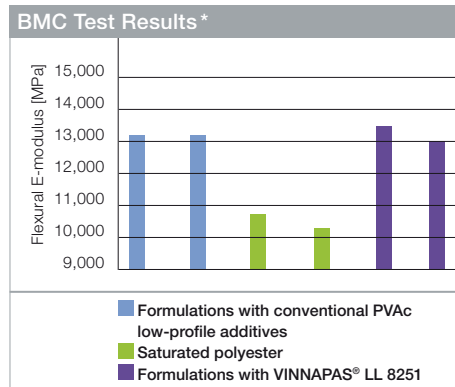
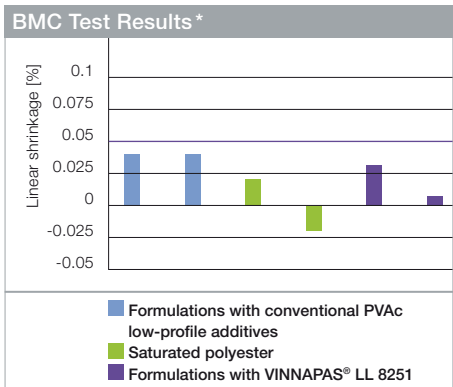


**Efficient Compensation of Shrinkage**

VINNAPAS® LL 8251 efficiently compensates shrinkage of unsaturated polyesters, in typical high-temperature molding processes.

**Combined with High E-Modulus**

Formulations based on saturated polyester show the lowest shrinkage but stiffness (E-modulus) suffers considerably. Formulations based on VINNAPAS® LL 8251 show a good combination of low shrinkage and high E-modulus.



\*10 wt % glass fibers; length 6 mm

**At a Glance:  
Advantages of VINNAPAS® LL 8251**

- Undiminished shrinkage compensation
- Mechanical performance like conventional PVAc grades
- Significantly lower formulation viscosities

