

Drs. John Hazen*, Dr. Benjamin Voogt; Lawter; NL-Maastricht



HIGH SOLIDS TACKIFIER DISPERSIONS; LESS WATER IS MORE SUSTAINABLE

Bio-renewability and sustainability are currently two key drivers in new product development. Companies have set related goals.

Lawter provides solid tackifiers for hotmelt adhesives and tackifier dispersions for water-based PSA's based on rosin obtained from pine trees, a bio-renewable source. The tackifier dispersions show good miscibility with polymer dispersions to design adhesive formulations with required wet processability and desired dry adhesive properties. In general, the polymer dispersions have a dry solid content up to about 70% by weight. Today's tackifier dispersions, however, typically have solids contents ranging from 50 to 60% by weight.

Increasing the solid content of tackifier dispersions will provide sustainability benefits. One, increased solid content will decrease logistic demand since less volume of product is needed for the same amount of solid-active tackifier. Two, the amount of water that needs to be evaporated from the wet adhesive coating is decreased, saving energy on the dryers. Three, less water is consumed in making the tackifier dispersions.

High solids tackifier dispersions cannot be made by just reducing the water content for existing products. Such approach leads to sharp increase of dispersion viscosity, causing issues with processability such as pumping, filtering and mixing. A high solids tackifier dispersions should, at the very least, possess similar processability, product shelf life and dry adhesive properties when formulated as their lower solids counterparts.

We present the work on developing tackifier dispersions having a solid content of 66% by weight. First, the approach used in manufacturing is explained. Second, results are shown related to wet product processability and shelf life. Third, the effect in preparing adhesive formulations is explained. Finally, PSA properties are presented for the related adhesive formulations.