T4 Novel Polymeric Dispersants for Application in Suspension Concentrate and Seed Coating Formulations

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Stepan has developed a new line of strong polymeric, nonionic dispersants for dispersing hydrophobic molecules in aqueous suspension concentrates. These dispersants provide superior dispersion performance of a wide range of organic molecules as well as demonstrate crystal growth inhibition properties and improved film formation qualities.

This work focuses on the utilization of these novel polymeric dispersants to disperse solid organic compounds, specifically pesticides and pigments in agrochemical formulations. Because of their modular scaffold design, several variations were screened through first, followed by a more rigorous screening that included more than 60 molecules. Initially, lead candidates were selected based on their performance in a variety of suspension concentrate (SC) formulations, including Bifenthrin, Imidacloprid, and Metribuzin SCs. The latter two active ingredients (AIs) are well known to have stability issues caused by their solubility levels in water. The best performing dispersants were able to significantly impede or stop crystallization of these AIs all together.

These results suggest superior performance in seed treatment and coating formulations, where high loading of AIs and pigments are desired. Due to an affinity for both organic pigments and AIs, these dispersants can play a dual role to improve the compatibility between the two formulation types. In addition, these molecules have better adhesive and film-forming properties than commonly used dispersants, leading to enhanced performance regarding drying cycle time, dust control, and flowability. This presentation will discuss the evaluation process of these novel polymeric dispersants, detailing the role of the dispersants in both formulation stability and application performance.