Improving Dispersion in Filled Polymers

Cray Valley Hydrocarbon Specialty Chemicals (HSC) developed a cost-effective water-based application process for minerals in filled polymer systems. Pre-loading select non-halogenated minerals with a functionalized liquid polybutadiene (LPBD) improves dispersion and enhances a composite's mechanical properties. With a broad application base, this process results in better adhesion to and coverage of mineral surfaces in non-halogenated composites.

When Ricon®, a functionalized liquid polybutadiene oligomer, or SMA® (styrene maleic anhydride) is applied to minerals using an aqueous solution, interfacial surface tension decreases. Ductility and flame resistance improve, along with heat release rate (HRR) and rate of smoke release (RSR). Compounds also demonstrate a lesser tendency to burn in line with a V-0 UL rating. All of the above are characteristics of improved dispersion of the filler.

"The amount of synthetic, flammable material in products has risen significantly, and the industry is progressively phasing out dangerous halogenated compounds from the manufacturing process. Our research into aqueous surface treatments was an attempt to facilitate low-cost, flame-resistant alternatives," said Jeremy Austin, business development manager for Cray Valley. "Applying wet chemistry to non-halogenated minerals created an ideal scenario in which dispersion led to homogenous surface coverage and optimized composites."

Water-based surface applications provide excellent film formers and allow formulators to use large quantities of filler versus additive, which reduces production costs. Leveraging non-halogenated materials at the industry level does not require significant changes to a compound's chemical structure and offers an environmentally friendly process for filled polymers.

For more information, please visit www.cvpolymeradditives.com *[1].*

Globally based in Exton, Pa., Cray Valley USA LLC is part of Total's Refining & Chemicals division. Cray Valley manufactures Norsolene®, Wingtack® and Cleartack® hydrocarbon resins; Poly bd®, Ricon® and KrasolTM polybutadienes; SMA® copolymers; and Dymalink® coagents. These products are used as raw materials and additives for adhesives, rubber, polymers and other applications.

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