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Using nature to flame retard polyolefins

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Synthetic polymers bring great value to life, but suffer from their oil/gas-derived flammabilities. Halogenated, and more recently phosphorous-based flame retardants have been used for the past generation to reduce fire danger in these products, but in many cases raise toxicology and regulatory issues. Nature has evolved materials over the years which reduce fire danger in the biosphere; some of these, as well as some unexpected materials can be added to man-made products with great effect. This talk will discuss potential bio-based flame retardant systems which significantly reduce the flammability of polyethylene and polypropylene. Mechanical and UL (94) flammability test results will be presented along with detailed material compositions. The work demonstrates that combinations of naturally occurring, low-toxicity additives can be added to polyethylene and polypropylene with no significant loss of mechanical properties, but achieving V(0), self-extinguishing/non-dripping performance.

Biography

David A Schiraldi has completed his PhD in Chemistry from the University of Oregon and worked in the chemical/polymer industry for 20 years, then moved to the Department of Macromolecular Science & Engineering at Case Western Reserve University, where he is currently the department Chairman. He has published approximately 200 peer-reviewed papers, holds 20 US patents, launched a startup company, is a Fellow of the American Chemical Society and is on the Advisory Boards of a number of journals and academic departments.

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