Development of Improved Composites and Adhesives for Aircraft Structures and Interiors

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The commercial aircraft industry is constantly striving for increased passenger safety. An important aspect of these improvements is reduced flammability of the materials used in aircraft interiors and structures. The improvements in flammability performance have been achieved frequently at the sacrifice of other properties such as processability, mechanical performance and surface quality. In addition increased health and safety regulation puts pressure to find new environmentally friendly products. Henkel is striving to combine the best possible product quality with effective environmental protection and social responsibility. Benzoxazine resins have been developed to meet the most stringent flame, smoke and toxicity (FST) requirements for aircraft interiors, and to cure at the low temperatures and short times typical of these applications. Benzoxazine resins also offer potential improvements in surface finish over phenolics. This can provide cost reduction through the elimination of rework, and improved flammability performance through elimination of additional resin to fill the surface. Henkel has also sought ways to enhance proven technologies, such as epoxy resins, with environmentally friendly solutions without jeopardizing material properties. New requirements further drive the need for materials with improved FST performance. A new family of adhesives has been developed and evaluated for aircraft interior applications, including paste adhesives for edge close out, expandable adhesives for core-splice and for honeycomb core reinforcement. The adhesives have been further optimized for handling characteristics such as dispensability and slump performance. Results will be presented on these materials and their applicability for aircraft interiors applications.