Direct Attachment of Metal Inserts to Baypreg® Polyurethane Composites

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Abstract

Bayer MaterialScience is currently supplying Baypreg® polyurethane (PUR) material for the production of automotive sunshades and load floors in the U.S. One of the main reasons to use a Baypreg PUR honeycomb composite is the material's blend of high stiffness and light weight. A key advantage this urethane composite possesses is its ability to provide parts consolidation. The incorporation of metal connectors or hinges is feasible during the molding operation. This precludes the need for a time-consuming secondary operation that adds cost to the operation.

An obvious concern to the molder and end user is how well the metal bonds to the finished part. Whether there is a need to treat the metal insert before molding is also a question that is raised by production personnel. This paper will present work done with steel and aluminum inserts to mirror what is seen during the production of Baypreg PUR composite parts. The inserts have been pre-treated in several ways. They have been directly molded into composites utilizing a variety of urethane formulations. The pull-out forces recorded during testing are compared and conclusions are presented as to the best pre-treatment scenario based upon insert material type.