



EFFECT OF MOLD SHAPE IN RAPID ROTATIONAL FOAM MOLDING

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Rapid Rotational Foam Molding is a technology for processing integral-skin cellular composites that has been recently deliberately developed to minimize the duration of the typically very lengthy rotational foam molding processing cycle. This paper focuses on testing and characterizing the sensitivity and robustness of this manufacturing method with respect to implementing molds with various shapes and the respective quality of the resulting polyolefin cellular composites. In this context, an experimental comparative study has been conducted by involving three dedicated molds having distinct shapes while occupying approximately equal volumes. Although the rotational molding process is well known for its unique capability of molding double-walled features, filling completely a double-walled mold cavity in Rapid Rotational Foam Molding proved to be a non trivial problem. The experimental results revealed the necessity for applying several modifications on the double-walled mold, especially its design and venting. Consequently, integral-skin cellular composites comprising various combinations of polyethylene (PE) and/or polypropylene (PP) grades used for making the integral solid skin and/or the foamed core were successfully produced using all the three experimental mold shapes.