Accepted Manuscript

Mechanical properties in glass fiber PVC-foam sandwich structures from different chopped fiber interfacial reinforcement through vacuum-assisted resin transfer molding (VARTM) processing

Qihui Chen, Ting Linghu, Yingju Gao, Zhi Wang, Yaqing Liu, Ruikui Du, Guizhe Zhao

PII: S0266-3538(17)30006-4

DOI: 10.1016/j.compscitech.2017.03.033

Reference: CSTE 6718

To appear in: *Composites Science and Technology*

Received Date: 2 January 2017

Revised Date: 16 March 2017

Accepted Date: 21 March 2017

Please cite this article as: Chen Q, Linghu T, Gao Y, Wang Z, Liu Y, Du R, Zhao G, Mechanical properties in glass fiber PVC-foam sandwich structures from different chopped fiber interfacial reinforcement through vacuum-assisted resin transfer molding (VARTM) processing, *Composites Science and Technology* (2017), doi: 10.1016/j.compscitech.2017.03.033.

Mechanical properties in glass fiber PVC-foam sandwich structures from different chopped fiber interfacial reinforcement through Vacuum-assisted resin transfer molding (VARTM) processing

Qihui Chen, Ting Linghu, Yingju Gao, Zhi Wang, Yaqing Liu, Ruikui Du*, Guizhe Zhao*

Research Center for Engineering Technology of Polymeric Composites of Shanxi Province, School of Materials Science and Engineering, North University of China, Taiyuan, 030051, P. R. China;

*Corresponding authors. E-mail: hugh-wang@nuc.edu.cn (R. Du), zgz@nuc.edu.cn (G. Zhao)

Abstract: Sandwich beams were prepared by vacuum-assisted resin transfer molding, containing a PVC foam core covered with two glass fiber/epoxy composite face sheets. Their mechanical properties were measured by impact test and three-point bending (3 PB) test. To improve the interfacial bonding between the PVC foam core and glass fiber face sheets as well as the mechanical properties of the sandwich structure, different chopped fibers (aramid fiber, carbon fiber and glass fiber) with the same lengths and densities were inserted at the face-core interface during fabrication. Compared with the beam without interfacial reinforcement, the bending strength and energy absorption were increased by up to 100% and close to 161% respectively under 3 PB condition, and the impact strength after interfacial reinforcement using chopped glass fiber was augmented by nearly 45%, surpassing those of other two