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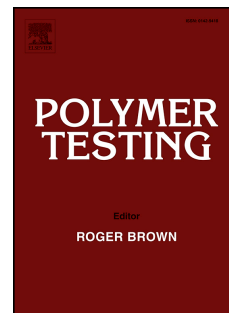
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Crush performance of multifunctional hybrid foams based on an aluminium alloy open-cell foam skeleton

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Abstract

Multifunctional hybrid foams were developed and tested by combining aluminium alloy open-cell (OC) foam specimens with polymers, epoxy resin and silicone rubber. The rectangular OC foam specimens were impregnated with polymer, completely filling the voids. The aim of this work was to evaluate the effect of the polymer presence in the voids of aluminium alloy OC foam specimens (varying their size, e.g. height to width ratio) on the crush performance of the resulting hybrid foams. Quasi-static and dynamic uniaxial compressive tests and infrared thermography were used to compare the behaviour of hybrid foams with conventional (unfilled) OC foam specimens. Results show an improvement of the compressive strength and energy absorption capacity of hybrid foams, especially when infiltrated with epoxy resin. The results show that the epoxy leads to higher capacity of specific energy absorption of the hybrid foams, while silicone leads to lower capacity of specific energy absorption in comparison to the OC foam specimens. The high energy absorption values of OC foams embedded with silicone are not enough to compensate for the mass increase due to the

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