

عنوان مقاله:

High Velocity Impact behavior of GRP panels containing coarse sized sand filler

محل انتشار: شانزدهمین کنفرانس سالانه بین المللی مهندسی مکانیک (سال: 1387)

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خلاصه مقاله:

Ballistic performance of glass reinforced plastic (GRP) composite plates with coarse sized sand filler was investigated as an attempt towards a developing a low cost armored system. In all, ten different types of plates from four to twelve layers of E-glass chopped strand mat reinforced polyester resin containing 0, 10 and 20 percent of 600-700µm sized sand filler were tested. A smooth barrel gas gun was used to conduct high velocity tests in the range of 70-185m/s. Results indicated higher ballistic performance for GRP plates with sand filler in terms of higher ballistic limits (Velocity at which at least fifty percent samples were partially or fully penetrated the target plates with zero residual velocity), particularly for plates with highest sand filler loadings. Energy absorption associated with these specimens also showed higher performance. Delamination was identified as dominant failure mode, in particular for thicker specimens with highest sand filler loading. Specific energy absorption per weight per unit area for the composite plates indicated diminishing effectiveness with increase in sand filler loading, thereby limiting its possible application to armored .system for stationary objects only

کلمات کلیدی:

High velocity impact, composite, sand filler, friction

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