

عنوان مقاله:

Investigation of the effect of impactor shape on the behavior of composite sandwich plates with aluminum foam core at low-speed impact: Experimental and physical study

محل انتشار:

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خلاصه مقاله:

In this paper, the effect of impactor shape and type of porcelain layer on the surface of composite sandwich panels under the impact of drop weight has been investigated. The core of the sandwich plate is A۳۵۶ aluminum foam reinforced with SiC particles produced by fusion method using CaCO₃ foaming agent. The surface of the plates is made of epoxy glass with a quasi-isotropic, orthogonal porcelain layer and also a pure aluminum layer is used. For the impact test, the drop weight impact device was used and to investigate the effect of the impactor shape spherical, parabolic and cone impactor manufactured. Some of the effective parameters in evaluating the behavior of materials at impact load including maximum impact force, maximum displacement and the amount of specific energy absorbed by the plate for different situations are compared with each other. The results indicate that the greater the radius of curvature of the impactor, the greater the maximum impact force. Also, plates with quasi-isotropic composite surface have the highest adsorbed energy and plate with aluminum surface has the lowest amount of adsorbed energy. The orthogonal surface performs better in terms of maximum impact force and maximum center displacement. Therefore, depending on the use of sandwich panels, the use of composite surfaces (quasi-isotropic or orthogonal) instead of aluminum in the design of energy-absorbing structures was recommended.

کلمات کلیدی:

Low Velocity Impact,,, ,Composite Sandwich Sheet,,, ,Aluminum Foam,,, ,Impactor Shape,,, ,Layout,,, ,Energy-absorbing

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