

#### عنوان مقاله:

Experimental Investigation of the Polyurethane Foam Cross-section Effect on the Quasi-static Lateral Compression Process

#### محل انتشار:

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#### خلاصه مقاله:

This paper studies the effect of geometrical shape of the polyurethane foam cross-section under the lateral compression on the energy absorption capability, specific absorbed energy, mean force and maximum lateral force, in the quasi-static condition by the experimental method. For this purpose, some polyurethane foam specimens were prepared with the different shapes of cross-section such as equilateral triangle, rectangle, square, equilateral hexagon, and circle. All the specimens have the same cross-sectional area, length, density and mass. The experiments were performed by a DMG machine, Model 7166 by compressing the foam samples between two rigid platens, laterally. The experiments indicate that the specimens with the square and equilateral hexagonal cross-sections have the best energy absorption performance; and the equilateral triangular specimen has the worst energy absorbed energy, specific absorbed energy (SAE), and mean and maximum lateral load which sorted from the minimum to maximum: equilateral triangular cross-section, circular cross-section, equilateral hexagonal cross-section, and finally, square cross-section. Another attractive phenomenon is observed in comparison of two specimens with the rectangular cross-sections which laterally tested in two different directions, longitudinal and latitudinal sides of cross-section. The comparison shows that the SAE by the longitudinal side compressed specimen is higher than the .latitudinal side compressed specimen; but, the mean and maximum lateral loads have an inverse trend

# کلمات کلیدی:

Lateral compression; polyurethane foam; different cross-sections; energy absorption; quasi-static loading

## لینک ثابت مقاله در پایگاه سیویلیکا:

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