

## عنوان مقاله:

Axial Compression Performance of Square Tube Filled with Foam Aluminum

## محل انتشار:

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## خلاصه مقاله:

As a typical buffer energy absorbing structure, thin-walled tube filled with foam aluminum has good mechanical properties and energy absorption characteristics. Therefore, the axial compression performance of square tube and foam aluminum filled square tube was experimentally studied by quasi-static mechanical loading method. On the basis of the existing experimental research and theoretical analysis, the strain rate is introduced into the dynamic compression theory, and the mathematical model of the average crushing load of foam aluminum filled square tube under the axial quasi-static and impact loads is obtained. By comparing the theoretical results with the simulation results, the relative error of quasi-static and impact state is ۲.۸% and ۸% respectively. This paper not only proves that foam aluminum filling can significantly improve the bearing capacity and energy absorption performance of square tube structure in the axial compression process, but also provides a more specific theoretical basis for the axial compression energy absorption design of square tube filled with foam aluminum.

## کلمات کلیدی:

foam aluminum, Filling Structure, Square Tube, Impact resistance, Axial Compression

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