Numerical validation of a shock absorbing material for ballistic impacts

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Abstract

Koroyd structures are designed for applications requiring exceptional energy absorption characteristics or excellent strength to density ratios. For energy absorption applications it can be a substitute for traditional energy absorbers such as EPS, EPP, PE foam, PU foam and
viscoelastic foam. This new material has a strong, flexible and light-weight structure that can
be easily integrated into products. Koroyd structures are made of thousands of co-polymer extruded tubes, thermally welded to create an unparalleled, consistent and fully engineered core. The great advantages of this material are the high compressive strength and the low density.
In the current study, a finite element model is developed, based on experimental results, to validate the dynamic response of Koroyd structures using cylindric samples. The goal of this work is to develop a stable and flexible numerical model, using the LS-Dyna finite element modeling software, for the shock absorbing material, which should be able to represent the real model.

Keywords: shock absorbing, numerical, FE, Koroyd

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