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Mathematical models for predicting the quasi-static stress characteristics of corrugated paperboard with sinusoidal core along the longitudinal compression

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Highlights

- Two theoretical models to predict initial peak stress and plateau stress of five-layered and seven-layered corrugated paperboards respectively under the longitudinal compression.
- The presented model for initial peak stress can be obtained by analyzing the elastic buckling of board walls, which can be helpful for optimizing the structure of multi-layered corrugated paperboard.
- The model of the plateau stress is developed based on the energy conservation principle, which helps to characterize the energy-absorption properties of multi-layered corrugated paperboard in an actual logistic environment.
- Experiments are carried out to corroborate the presented model by comparing the predicted value with that by experiments, showing overall good agreement.

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