Effects of different fluting medium geometries on von-mises stress and deformation in single fluted board: a three-dimensional finite element analysis

ABSTRACT

Paperboard box produced in large volume for packaging purpose either to pack light or heavy product. When a heavy product is packed, high strength and structural stability against compression and deformation of the paperboard box are demanded. This paper investigates the effects of different shape of fluting mediums on the von Mises stress and deformation using finite element analysis (FEA) tool. Solidworks and ANSYS software were used to design a 3-D model and perform static structural analysis, respectively. The result from the analysis and simulation revealed that common s-shape geometry experienced the lowest von Mises stress and deformation. Honeycomb geometry experienced the highest von Mises stress of 0.19576 MPa while triangle fluting medium recorded the highest deformation at 1.8695E-4mm.

Keyword: Fluting medium; Stress; Ansys; Finite element analysis; Solidworks