Correlation between the adhesive tensile strength and the engagement grade of crosswise oriented nonwovens of metal hook and loop fasteners

Abstract:

Joining is one of the key technologies for industrial products. Nearly all goods need to be joined during their production development process. An innovative joining method such as a metal hook and loop fastener offers new possibilities for the design and functionality of a product. In contrast to a synthetic hook and loop fastener, a metal fastener combines the advantage of a fast assembling or disassembling with the characteristics of a metal joining. The outstanding benefits of the metal hook and loop fastener are temperature and acid resistance. Additionally, features such as shock or sound absorbance can be realized. In this paper, we present the development and characterization of a metal hook and loop fastener. The cohesion of the joining is analyzed by cross tension tests as well as by shearing tests. To draw conclusions from the design of the joining partners, the joining patches are analyzed by neutron μ-CT and compared with force measurements.

Stichworte:

Joining; Nondestructive testing; Computer tomography; Biomimetics