STAB RESISTANT KNITTED CLOTHING

Marcus O. Weber¹, Susanne Aumann¹, Andrea Brücken¹, Andrea Ehrmann¹, Thorsten Bache², Sina Christin Beck²

¹ Niederrhein University of Applied Sciences, Faculty of Textile and Clothing Technology, Mönchengladbach (Germany)
² Bache Innovative, Rheinberg (Germany)

Abstract

Stab and cut resistant textiles are mostly produced from aramide or ultra-high molecular weight polyethylene (UHMW-PE). These materials have stab resistant properties combined with a lower weight compared to chain mail.

In a recent ZIM project, knitted structures with stab resistant properties have been developed for a safety jacket, combining cut resistant yarns with a loop form, similar to chain mail. Compared to woven fabrics or non-wovens, knitted fabrics offer an enhanced drapability, which makes them better suited for being used in a jacket with high wearing comfort.

In the Niederrhein University of Applied Sciences, fabrics have been knitted by using different structures, yarns, and yarn combinations. They have been finished with diverse methods (coating, laminating, felting …) and evaluated in order to optimize the combinations of yarn, structure, and finishing with respect to their stab resistance properties.

The project partner Bache Innovative has developed several models of knitted safety jackets, starting from a light summer jacket with lower protective properties to models for people with particularly high risk potential, offering an increased stab resistance.

The results of stab resistance tests of different combinations of yarn, structure, and finishing as well as the different jacket models are presented.