

ABSTRACT SUBMISSION



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Multifunctional Effects of Metal Coated Lightweight Nonwovens

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ABSTRACT (NO MORE THAN 500 WORDS:)

Electrically conductive fabrics based on surface coating by conductive materials are promising e.g. for creation of conductive paths and heating elements. By proper selection of conductive components it is possible to obtain fabrics with enhanced electromagnetic shielding, improved thermal insulation reflecting of body heat back and suppressing infrared signature of humans. The benefits of electrically conductive nonwovens are mainly due to their desirable flexibility and light weight compared to traditional materials based commonly on metal sheets. Majority of surface coatings are creating dense layer on textile fabrics surface which is deteriorating their comfort. By proper selection of surface deposition technology it is possible to cover the fibrous part of fabrics only. Because of more than 85 % of nonwovens volume is air it is possible to obtain electrically conductive fabrics with sufficient permeability for air and water vapor. Main aim of this lecture is description of procedure for textiles surface deposition based on the chemical surface activation followed by surface deposition of cuprous salts and in situ reduction of copper particles at ambient temperatures. For this type of surface metallization the polyester nonwovens MILIFE was used. The electrical conductivity, electromagnetic shielding effectiveness, ohmic heating and reflection of IR radiation of metal deposited lightweight nonwovens will be discussed in details.