

Peculiarities of Metal Coating Deposition on Polymer Fabric

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Deposition of coating (in particular metallic) on polymer fabric adds new characteristics to it, for example, increased (decreased) reflection, electro conductivity, improved decorative characteristics, etc. Deposition of coating in vacuum is more progressive method compared to «liquid» methods. It is more environmentally friendly, gives good adhesion, in some cases it is the only possible way of coating deposition.

Vacuum deposition of coating on polymer fabrics has a number of specific features compared to polymer films and other base materials: low heat transmission, high excretion of gas. Polymer fabrics require careful pre-treatment — drying, activation of surface in gas plasma.

The study shows that the thickness of the coating deposited by magnetron sputtering during one run is limited because of the fabric low heat transmission, for example, for stainless steel the maximum thickness during one run through the sputtering zone should be below 30 nm. To control more effective fabric characteristics the study looks at different methods such as thermal evaporation of metals, electron beam evaporation and deposition of metals and alloys by magnetron. Aluminium, stainless steel, titanium and others are used as coating materials. Connection between technological parameters of the process and some coating characteristics has been found.