Примена на текстилен отпад за производство на композитни материјали

Using of textile waste for production of composite materials

Silvana Krsteva[1], Vineta Srebrenkoska[1] and Goran Demboski[2]

[1] Faculty of Technology, Goce Delčev University, "Krste Misirkov" b.b. P. O. Box 201, 2000 Štip, Republic of Macedonia
[2]Faculty of Technology and Metallurgy, Sts.Cyril & Methodius University, MK-1000 Skopje, Republic of Macedonia

Abstract

In recent years, increased emphasis has been placed on developing recycling techniques for industrial waste products, with the goals of protecting the environment. However, relatively little investigation has been conducted regarding such a recycling system and most of these waste products are destroyed by fixed or buried underground.

The aim of this work was investigation of the possibilities of reusing of cotton textile waste, generated during the manufacture in textile industry, as reinforcement in production of composite materials. In the framework of this work, the main focus has been put on the preparation and characterization of composites based on textile waste. The materials have been cotton fabric and cotton textile waste as reinforcements and phenol phormaldehyde resin as matrix. The composites containing 60 % wt. reinforcement were manufactured by compression molding. For the composites, the mechanical and thermal properties were analyzed and compared to those of commonly used continuous fiber reinforced composites based on cotton fabric and phenloic resin. It was found that the composites based on cotton textile waste are more sensitive to processing cycles with respect to continuous fiber reinforced composites. The mechanical properties for composites based on cotton textile waste are decreased for about 25% but the thermal stability investigated by Martens method for both composites reinforced with cotton fabric and with cotton textile waste is very similar. The obtained results have shown that cotton textile waste could be reused for production of composite with acceptable mechanical properties and they can be successfully used in many industries as construction material.