

ADVANCED POLYMERS USED IN PLAIN BEARINGS

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Rezumat. Odată cu dezvoltarea fără precedent a industriei, bazată pe sisteme automate, numărul elementelor în mișcare a crescut exponențial. Asigurând rularea fără lubrefiere chiar și la viteze mari, fără zgomot, cu randament ridicat, în game largi de temperaturi, aducând cu sine și avantaje de preț semnificative, fiind insensibile la contaminanți externi și vibrații, materialele compozite pe baza de polimeri asigură avansul tehnologic cerut de Industria 4.0.

Abstract. With the unprecedented development of the automated industry, the number of moving elements has grown exponentially. Ensuring the smooth running, even at high speeds, without noise, with high efficiency, in wide temperature ranges, bringing with them significant cost advantages, being insensitive to external contaminants and vibrations, the composite materials based on polymers ensure the technological advance required by Industry 4.0.

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1. Introduction

Plastics are synthetic products of an organic, inorganic or mixed nature, which can be easily processed into various forms, hot or cold, with or without pressure.

The first plastics were produced from the transformation of natural materials. In 1859 vulcanized fibers appeared, in 1869 celluloid appeared and in 1897 galite. The first synthetic material to appear (1908) was the phenolformaldehyde resin called Bakelite. There are numerous processes for the manufacture of plastics. A bucket, a bottle, a motorcyclist's helmet, a windsurfing board are all made of different types of plastic. For each object, you must choose the plastic material that has the most suitable qualities: suppleness, rigidity, shock resistance, elasticity, transparency, light weight. In general, the product that starts in the manufacture of plastics is oil, a product obtained in oil refineries. Petroleum is a mixture of different hydrocarbon molecules. This mixture is brought to high temperatures in the presence of water vapor, which causes the breaking of hydrocarbon molecules and obtaining smaller molecules, ethylene molecules. Ethylene is the molecule on which the entire plastics industry is based [1], [2].

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