

**PERSPECTIVES OF USING POLYESTER WASTE COMPLETE FOR THE MANUFACTURE OF FINISHED PRODUCTS USING THE 3D PRINTING METHOD**

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Modern light industry uses various types of raw materials for the manufacture of clothing and household items. Among synthetic polymers, the leading position in the world is occupied by polyester (Polyester) - fibers that appeared thanks to the active evolution of the oil refining industry. This is a type of synthetic material. Outwardly, it resembles fine wool, but in terms of consumer properties, it is closer to cotton. It is made from a melt of polyethylene terephthalate - a strong, wear-resistant thermoplastic, which is a good dielectric [1].

Mylar is one of the varieties of polyester fiber.

Polyester is one of the most common and modern materials used to create various types of synthetic fabrics. This material began to be actively used in light industry only in the early 60s of the 20th century.

It is used when sewing everyday clothes and accessories: pants; skirts; dresses; raincoats; coat; a jacket; sports suits; t-shirts; shorts; patch; tie

Polyester is used to make home textiles, including bed linen, curtains, and tablecloths. The fabric is also suitable for dragging furniture. It is economically beneficial, as polyester is inexpensive – cheaper than other upholstery materials.

Many items of tourist and fishing equipment, starting with protective covers and ending with sunbeds, are made of this material. Awnings, tents and sleeping bags are made from it.

From the same fabric, only of a different density, medical films and covering materials for gardeners are made. In the food industry, it is used as a filter material for filtering solutions. This synthetic material is also in demand in the shoe industry, as well as in the production of workwear.

A wide range of ready-made polyester products raises the question of their further disposal after the period of operation or processing into finished products.

Polyester fibers are not biodegradable. For example, in clothes, their number is about 16%. One of the advantages of such fibers is that they can be processed into primary (new) fibers. Recycled polyester fibers, made mainly from plastic bottles, increased their market share from 8% in 2007 to 14% in 2017 [2].

Most light industrial products are still thrown away and burned in incinerators or end up in landfills. Among them are products containing polyester (mylar) fibers.

Recycling also faces a number of challenges, meaning that globally only less than one percent of all materials used in clothing are recycled back into clothing. This reflects the lack of technologies for their further processing. In addition, the existing technologies that allow the processing of clothing into virgin fibers are still imperfect. Therefore, an urgent task is to create a technology for processing products that incorporate polyester fibers into new finished products.

One of the advantages is that when heated, polyester melts, and if it is passed through small holes, thin threads are obtained. When cooled, they harden and form threads.

It is proposed to use shredded polyester waste as raw material for creating new products by 3D printing.

**References**

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