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PROCESSING NONWOVENS BY PRESSING

E. Zimina, doctoral student

*A. Kogan, professor of the Department of Technology of Textile Materials
Vitebsk State Technological University, Belarus*

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Abstract. Use of technology can be developed to produce nonwovens with high fracture resistance, tear resistance, tensile strength, and wet strength due to the use of waste fibers, which have the properties of the feedstock.

Compared to traditional methods of production in the textile industry - spinning and weaving - manufacture of non-woven fabrics is simple technology, hence, lower capital and labor costs, a variety of assortment of paintings, features the rational use of various raw materials, lower production costs, the ability to maximize the automation of production, .e. creation of production lines and factories, machines, and themselves nonwovens have good performance characteristics. Of particular relevance today have the technology of non-woven materials from recycled resources.

Textile waste is an integral part of municipal solid waste and waste are divided into production and consumption waste. Textile waste consumption are a major source of secondary raw materials for secondary textile materials.

Textile waste consumption are of mixed composition, not divided by types of fibers, often contaminated and are weighted flap tissue. Any technology of textile waste should include the preparation of the secondary textile raw materials.

Most of the textile production and consumption wastes used as secondary raw materials in the development of non-woven fabrics. The technological process of the production of such materials consists of three main stages: preparation of fibers (cleaning, mixing); forming fibrous web, fibers in fixing a canvas; treating the material and its finishing.

One of the promising areas of recycling textile waste is the production of nonwoven materials by hot or wet pressing, the development of which is held in Vitebsk Technological University. The use of such methods for manufacturing nonwoven materials is quite promising. Currently, quite acute problem of waste disposal. These methods give a second life to waste, light industry, and in particular of short-waste. Goals of nonwoven materials developed in this way are rather wide: to improve the quality of consumer goods, broadening the range of domestic interlining materials and temperature range overlaps.

For the production of nonwoven materials by hot and wet pressing as the main raw material component is proposed to use a hairstyle faux fur waste fibers with a length not exceeding 25 mm. These wastes are generated as a result of shearing carpets Production Joint Stock Company "Vitebsk Carpets" with fiber length of 10 mm. In the mixture of waste included nitron, polyester and wool and nylon fibers.

Research evidence that using a short fiber molding process improves. However this is due to reduction in the strength of the finished fabric, and, conversely, the use of longer fibers results in an increase of the material strength, but complicates the dispersion conditions [1].

Manufacture of non-woven material and a hot-wet compression technology includes the following steps:

- preparation waste;
- creation of the adhesive composition;
- the formation of the web;
- pressing (drying).

Preparation Phase is cutting textile waste, carried out with the help of special crushers. To optimize the cutting conditions are taken into account data on the processed material: linear density, stiffness fibers; data for the shredding: dimensional characteristic frequency ranges of rotation, the feed, the maximum thickness of the cutting, cutting power, the type of cutting tool, the geometrical parameters of the cutting edge.

Then the phase of the adhesive composition which is basic. The loosened shredded fibrous waste material is added to the adhesive composition, then the resulting mass is mixed thoroughly until smooth.

Then the resulting mass is moved to the area of formation of the web. Formation is a process of combining the fibers in sheet form with the creation of a certain volume of the capillary-porous structure. Production of rolled materials by wet-pressing is carried out in the papermaking equipment using a hot press type 2PG-500. As the main raw material component used button of shearing, as adhesive used dextrin glue.

The developed technologies allow to produce non-woven web materials on existing equipment using textile waste, and hence solve the environmental problem of accumulation.

References

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