

## INNOVATIVE MATERIALS AND TECHNOLOGIES IN THE DESIGN OF FASHION PRODUCTS

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**Abstract.** *The paper presents a study of the influence of materials on the creation of design products of modern forms. It is proved that the properties of materials significantly affect the shaping of products, so the search and study of existing and potential materials and technologies that can be used in design is an urgent design task. It has been determined that the study of innovative materials and technologies in the design of modern design products contributes to increasing the level of artistic, creative, scientific, and cultural potential of designers, engineers, and manufacturers in the society of consumption of modern design products.*

**Keywords:** *design products, decor, innovative materials, fashion technologies.*

### Introduction and formulation of the problem

Fashion often turns to other art forms, such as painting and graphics, for ideas, which often serve as the primary source for creating clothing collections, material prints, and colourful decor for product design. An example is the paintings of twentieth-century modernist artists: bold strokes and bright colours are perfectly modified into fabric patterns and fashion product decoration. Designing prints of materials in the author's design of luxury collections and individual items requires taking into account the structural structure of the products, the balance of colours, the placement of decorative elements in accordance with the compositional requirements and cut features. For example, a pattern is usually placed along the fabric, so a slanting cut can distort it; a unidirectional pattern is always less flexible when cutting than a multidirectional one. Today, even the streets of big cities serve as a primary source of decoration - brightly coloured graffiti can inspire the creation of fabrics with fantastic patterns in the spirit of modern urbanism. If you're not interested in that, or if you want to be shocking or draw attention to environmental issues, you can start creating with garbage. Colourful packaging can accurately reflect the cultural backgrounds of many countries that produce design products, it is a compact combination of colours, ideas, and symbolic images. However, it is always important to study the peculiarities of using materials for the manufacture of fashion products of modern forms, which makes this article relevant.

### Methodological part

The methodological basis of the study is a systematic approach, analysis of scientific, technical and regulatory information, methods of literary and analytical, systemic and structural, comparative analysis

### Results and discussion

The study of innovative materials and technologies in the design of modern design products aims to open up new opportunities to improve the functional, aesthetic, environmental and economic characteristics of products, as well as to meet the needs and desires of consumers. In

recent decades, one of the main areas of improvement and enhancement of the quality of chemical fibres has been the development of ultrafine fibres that allow creating a certain texture (surface structure) of the material: peach skin effect; suede-like surface; velvety, soft, silky surface; natural silk mascara effect. Fibres and materials that bring pleasure to the senses are now called *high-touch*.

The study of innovative materials and technologies in the design of modern design products includes such stages as:

- analysing the problem and tasks, identifying consumers and competitors, as well as trends, requirements and constraints related to the design of a design product;
- search and study of existing and potential materials and technologies that can be used in the design of fashion products, taking into account their properties and advantages, availability and cost, environmental impact and other criteria;
- experimentation and testing of various combinations and variants of materials and technologies used in the design of fashion products in order to test their functionality, aesthetics, innovation and other characteristics;
- selection and justification of rational materials and innovative technologies used in product design based on the results of analysis and testing, as well as feedback from users, experts, customers and other stakeholders;
- development and implementation of the product design using selected materials and technologies in compliance with the established requirements with the use of modern tools in the manufacturing processes and other design-related aspects, as well as evaluation and correction of the fashion product design.

The design of fashion products, as well as materials for interiors and decor, depends on the fibre composition and physical and mechanical properties of the materials. Today, the market is represented by modern materials that allow creating complex shapes to achieve various effects [1]. The range of textile fibres is being expanded in the following main areas: modification of fibres to improve comfort, strength, wear resistance, etc.; creation of superfibres with special properties (ultra-strong and elastic, ultra-thin, etc.); creation of interactive fibres that actively respond to changes in external conditions (heat, light, mechanical impact, etc.); development of technologies for the production of synthetic fibres from natural raw materials for the synthesis of modern fibre-forming polymers and improvement of the quality of natural fibres. Today, intelligent materials and new means of manufacturing materials using digital technologies are a separate area. So, as the creative contribution of designers to materials development shifts from finding application opportunities to an expanded definition of unlocking the potential of materials in a combination of production, application and user evaluation, a new conceptualisation is needed to discuss what these potentials are.

It is known that the Bauhaus [2] had a profound impact on the development of the design industry, especially in establishing a pedagogical and pragmatic approach to understanding materials and creativity. The Bauhaus teachers and students were the first to combine the know-how of traditional craftsmanship with modern machine processes and create a unified style that combined art, craft and technology. They explored materials through discussion and practical research. This approach reflected the close connection between the direct perception of materials and the study of their essential and diverse characteristics [1, 2]. The practical approach was necessary for the central principle of preferring forms that were fair to the nature of the material: the use of unorthodox materials and the testing of their design possibilities in the creation of furniture was promoted.

More recent developments in the field of materials and design refer to the growing number of experimenters and creators among artists, designers, architects and engineers who have a particular interest in material making: technological developments, advanced and intelligent materials, new means of producing materials using digital technologies. The well-known phrase "form follows materials" emphasises material as a characteristic element of design. Thus, today

the design practices of contemporary design activity, primarily in author's design or by well-known brands, go beyond justifying the choice of materials and explore the innovative potential of using modern materials: design products that use grown biomaterials as a substitute for conventional materials are also considered archetypal in terms of form and function.

The study of materials in the context of designers' creative practices is aimed at determining the possibilities of creating forms according to their functional purpose: these categories are also used mainly to describe the creative contribution of designers to projects based on materials, for example, for textiles, furniture, decorative objects, etc. This means that each material has its own language of forms, which emerges through innovative technologies in their creation. Evaluation and correction of a product design using selected materials and technologies, based on collected data, facts, evidence, indicators, criteria, methods, techniques, tools, processes, stages, documentation, feedback, analysis, conclusions, recommendations, suggestions, comments, complaints, feedback, comments and other sources related to product design.

### **Conclusions**

As a result of our research, we have proved that the properties of materials significantly affect the shaping of products, so the search and study of existing and potential materials and technologies that can be used in design is an urgent design task. The presented study of innovative materials and technologies in the design of modern design products contributes to increasing the level of cultural, artistic, creative, scientific, technical and environmental potential of designers, as well as manufacturers and consumers of modern design products.

### **References**

- [1] Kolosnichenko, M. and other. *Dyzayn odyahu v polikul'turnomu prostori* [Fashion design in a multicultural space]. Kyiv: KNUTD. 2020.
- [2] Itten J. *Design and form: the basic course at the Bauhaus and later*. New York : Van Nostrand Reinhold, 1975.