

Секція 1

Новітні текстильні матеріали та технології

UDC 623.77

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CAMOUFLAGE AS AN OPTICAL TYPE OF MASKING

Purpose. *The aim of this research is to study camouflage as an optical form of masking.*

Keywords: *masking, color, camouflage, terrain.*

Objectives. Disguise is one of the main weapons of war. Sometimes it differentiates a failed and a successful operation. Today, a special role is assigned to the optical type of cloaking. The development of a field uniform for servicemen of special-purpose units, which has the maximum camouflage properties, is a complex scientific and practical task.

Methodology. Review of scientific sources on the general state of the research topic.

Research results. Within the framework of the eternal confrontation between the means of attack and defense, any army tried to develop harmoniously both components of the process of military confrontation. At the same time, the means of protection have developed both in the direction of ensuring the physical protection of objects on the battlefield, and increase of their secrecy [1].

Optical camouflage equipment, which are usually included into the clothing supply of the military units of the armies of the world, includes camouflage clothing and camouflage kits. Camouflage clothing is an individual camouflage device and is designed to hide personnel from visual observation, photography and other methods of optical observation and reconnaissance [2].

In the early stages of the development of military affairs in the conduct of hostilities, uniforms and various signal attributes of troops were necessary to ensure visible differences between units, both of the opposing armies and within each of them. This was determined by the method of combat operations control, in which the assessment of the current situation was mainly visual. But times have changed, the level of hostilities increased, which contributed to the emergence of effective long-range and rapid-fire weapons. In accordance with the new conditions of combat, the requirements for uniforms and ammunition have also changed. One of the obvious changes that made it possible to increase the secrecy

of actions and the security of personnel was the adjustment of the coloring of clothing items to the color of the surrounding area [1].

The maximum approximation of the color of the masked object to the color of the surrounding area did not fully solve the problem of increasing secrecy. The solution of this issue has become spotted coloring, blurring the contours of the object, hiding its geometric center, individual details and direction of movement, in order to make it difficult to recognize and aim. In 1939, a French artist of Russian origin Vladimir Baranov-Rossinet patented a spotted military uniform (“pointillistically dynamic camouflage”) or “chameleon method” [1].

The word “camouflage” has derived from the French verb “to play a joke” – in other words, to fool the enemy. Partially science, partially art, camouflage uses visual trickery to exploit weaknesses in the way the human eye and brain process visual information

The schemes of army camouflage patterns for a specific type of terrain on which it was supposed to conduct hostilities as the features of human vision during daylight hours were developed as the basis determining the color saturation of the picture, its geometric construction and contrast, were taken.

It is worth noting that increasing sensitivity to the surrounding area involves the development of an assessment of dominant colors that are more difficult than just green in summer and white in winter. Table 1 shows the dominant colors in the field for the Northern Hemisphere, which should be the basis for camouflage [3].

Table 1. Seasonal Color Changes

Season	Primary background colors
Early spring	Brown, black, dark green
Late spring	Bright green, brown
Summer	Dark green, bright green
Late summer / early autumn	Dark green, brown
Autumn	Brown, yellow, black, green
Late autumn / early winter	Brown, black, gray, slightly white
Early winter	White, gray, brown
Winter	White, grayish, slightly brown
Late winter / early spring	Brown, white, grayish

All types of camouflage are usually divided into several types of camouflage (depending on the terrain):

- “forest” (mainly Europe, America);
- “desert” (North Africa, Central Asia);
- “jungle” (tropical) (South Eastern Asia, South America);
- “winter” – for the hostilities in winter;
- “bush” (South Africa) – there are few types of camouflage, due to the territorial limitedness of the terrain and the financial ability of the countries that are on them [4].

In Fig. 1, 2 camouflage options are shown.



Fig. 1 Variants of Camouflage of NATO countries:
1) Woodland, 2) ACUPAT, 3) MARPAT, 4) Fecktarn

Fig. 2 Ukrainian
Camouflage
MM-14

However, it is impossible to imagine modern technologies of warfare without special means of detecting the enemy in conditions of complete darkness and low illumination. In night scopes, designed to monitor an object in the dark and aimed shooting, a soldier of special forces becomes vulnerable, since the principle of operation of such devices is based on capturing the thermal (infrared) radiation of a biological object.

Nowadays, active development of materials is conducted in many countries that would provide visual camouflage for military personnel in landscape conditions of any terrain. These developments can be divided into two main groups: clothing, made of materials that ensure the invisibility of a person through visual camouflage, and clothing, which provides shielding (complete or partial attenuation) of infrared radiation from a warm-blooded object.

Conclusion. Camouflage is assigned an important role under conduction of hostilities. The developed schemes of army camouflages, which colors are as close as possible to the color of the surrounding area, increases the level of stealth. However, modern technologies of warfare involve the development of a new level of protection, which would provide protection against devices, intended for the monitoring of an object in the darkness and for a targeted shooting.

References

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