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*A.A. Chernukha, Ph.D., Assistant Professor, NUCPU,
P.A. Kovaliov, Ph.D., Assistant Professor, Head of Department, NUCPU,
S.S. Ponomarenko, lecturer, NUCPU,
V.I. Yeriomenko, cadet, NUCPU*

**RESEARCH OF FIREPROOF PROPERTIES OF FABRIC FOR
FIREPROOF RESCUE STRETCHERS**

(presented DSc Sobol A.N.)

The results of experimental studies of the properties of fire-resistant textile materials are presented. A material is proposed for the manufacture of a protective cover for fireproof rescue stretchers.

Keywords: fire-resistant fabric, research, fireproof rescue stretchers.

Problem statement. The Constitution of Ukraine defines that in Ukraine the greatest value in life and health. Thus, the main objective of the rescue services is to preserve life and health of people from hazards of emergencies of various kinds. Scientific and technological development, the emergence of synthetic materials for the plastics processing facilities, facilities with thermal processes, a large fire load, the threat of outbreaks and fires during the evacuation are needs of departments State Emergency Service of Ukraine readiness for individual protection of affected. Rescuers have individual protection of body surface. So as to maximize the effectiveness of evacuation accompanied by or on stretchers, victims should be protected not worse than rescuers [3, 4].

Thus arises the problem the creation protect affected from dangerous fire heat factors in the evacuation from various buildings.

Analysis of recent research and publications. Earlier in scientific studies were offered fireproof rescue stretchers which imagined a special stretcher compact shape equipped with fire-resistant casing.

In [1] provides that the casing, which is a special fabric behaves like a thermal screen that is optically nontransparent thermally thin body. Being on the way spread of the heat radiation the cover is shielding from direct radiant heat flow from the flame towards the body of the affected human.

Under the influence of this heat flux cape is heated, becoming a source of heat for the affected people. Safety remains, if the total specific heat flux from the cape towards the body of the affected human Q_{fl} not exceed the corresponding critical value q_{cr} ($q_{cr} \approx 1200 \text{ W}\cdot\text{m}^{-2}$).

A mathematical model for calculating the protective action of a single-layer insulating capes designed to protect the victim's body from thermal radiation from the fire was constructed. Examination showed that the effective cape must have a minimum value of the degree of blackness of outer surface.

In [2] proposed a simulation model of rescue the affected from the room by using NRV-1, which fully reflects this process. Research of the critical path was bring recommendations to improve the efficiency of rescuing the victim from the room by using NRV-1.

Statement of the problem and its solution. Based on the above analysis, was tasked to determine the type of fabric that can meet the established criteria. Research conducted on samples of wool (surface density of 300 g/m^2) and lavsan (surface density of 160 g/m^2). For the experiment has been chosen as the basis DSTU 4155-2003 "Textile materials. Test method for flammability".

Research was conducted on the test installation (Fig. 1).

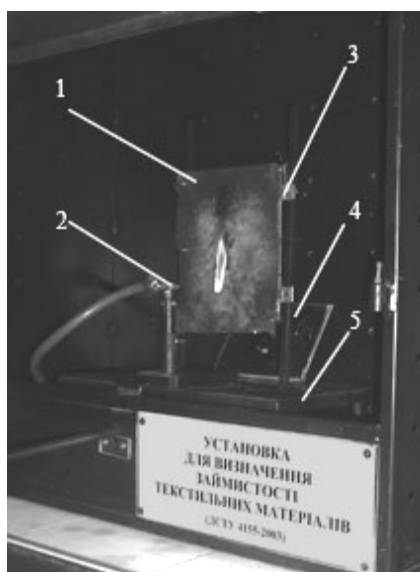


Fig. 1. Appearance of test installation: 1 – sample; 2 – burner; 3 – sample holder; 4 – thermocouple; 5 – base of installation

The samples were manufactured size $(220 \pm 1) \text{ mm} \times (170 \pm 1) \text{ mm}$. Before the experiment, the gas burner gas flow was such in which the flame height was $40 \pm 2 \text{ mm}$. The burner is installed in a horizontal position on the $(40 \pm 1) \text{ mm}$ above the lower edge of the sample and the sample moved to a distance $(17 \pm 1) \text{ mm}$.

Time of fireproof action of fabric was fixed as a burnout (formation of black dots) on the back of the sample. Burnout was observed visually using a mirror installed on the back of the sample.

Time was fixed with a stopwatch. Time of ignition of the sample is calculated as the average of three measurements.

Samples for of tests were made of fire-resistant fabrics: Metal Splash, RigChief, WELDERSAFE, PROBAN, FLAMESHILD 400.

Also tested material of heat-shielding fire clothing general type "TALAN".

The test results are presented in Tab. 1.

Tab. 1. The average time burnout samples

Material	Time heating, 70°C, s.	Time burnout, c.
Metal Splash	15	46
RigChief	23	45
WELDERSAFE c	14	36
PROBAN®	23	45
FLAMESHILD 400	25	54
TALAN (clothing fireman)	22	45

Tab. 2. The presence of stable burning of the samples after the removal of the source of ignition

Material	Stable burning (SB)
Metal Splash	SB absent
RigChief	SB absent
WELDERSAFE c	SB absent
PROBAN®	SB absent
FLAMESHILD 400	SB absent
TALAN (clothing fireman)	SB absent

**Fig. 2. Appearance of the samples PROBAN after testing**

Visually fixed samples of materials behavior after move away of burner. In all cases, the samples were observed steady burning (SG) after the termination of the flame (Tab. 2).

Conclusions. Chosen fire-resistant material that meets flame retardant properties of fire clothing. Received time, which open flame can act on fire-proof rescue stretchers until the critical temperature value in a stretcher and a burnout of fabrics.

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А.А. Чернуха, П.А. Ковальов, С.С. Пономаренко, В.І. Єрьоменко

Дослідження вогнезахисних властивостей тканини для нош рятувальних вогнезахисних

Представлені результати експериментальних досліджень властивостей вогнезахисних текстильних матеріалів. Запропоновано матеріал для виготовлення захисного кожуха нош рятувальних вогнезахисних.

Ключові слова: вогнезахисна тканина, дослідження, ноші рятувальні вогнезахисні.

А.А. Чернуха, П.А. Ковалев, С.С. Пономаренко, В.И. Ерёменко

Исследование огнезащитных свойств ткани для носилок спасательных огнезащитных

Представлены результаты экспериментальных исследований свойств огнезащитных текстильных материалов. Предложено материал для изготовления защитного кожуха носилок спасательных огнезащитных.

Ключевые слова: огнезащитная ткань, исследования, носилки спасательные огнезащитные.