



# HARVARD EDUCATIONAL AND SCIENTIFIC REVIEW

International Agency for Development of Culture,  
Education and Science



Har. Edu.a.sci.rev. 0362-8027  
Vol.1. Issue 1 Pages 13-19.  
10.5281/zenodo.5540763

Harvard Educational and Scientific Review  
International Agency for Development of Culture, Education and Science  
United Kingdom  
Street: 2 High Street City: Ashby Phone number 079 6425 7122  
Zip code DN16 8UZ Country United Kingdom  
USA  
Soldiers Field Boston, MA 02163 +1.800.427.5577

### **Editorial-Board**

Zhifei Dai, PhD

Robin Choudhury MA, DM, FACC

Jinming Gao, PhD

Andrei Iagaru, M.D.

Alexander V Kabanov, PhD, DrSci

Twan Lammers, Ph.D., D.Sc.

Richard J. Price

International Agency for Development of Culture, Education and Science United Kingdom  
USA Soldiers Field Boston

## **Formation of requirements for overalls for miners**

Mukhamedova Zukhrakhon Kazimovna, Kasimova Aziza Bakhadirovna  
Tashkent Institute of Textile and Light Industry

**Abstract.** The article presents the requirements of miners' workers for special clothing. The mining profession requires workwear to protect against abrasions, to protect against mine dust, to protect against cold air and water. The results of the physical and mechanical properties of workwear materials were presented and a model for miners was developed.

**Keywords.** overalls, miners, fabric, products.

**Introduction.** Pursuant to the decree of the President of the Republic of Uzbekistan dated March 1, 2017 No. PP-2807 "on expanding the production capacities of Almalyk KMK JSC on the basis of the Eshlik I field" and in order to accelerate the implementation of the investment project "development of the Eshlik I field": activities of a permanent working group to accelerate investment projects implemented by the joint-stock company "Almalyk mining and metallurgical plant" (hereinafter - JSC "Almalyk KMK"), and the effective organization of its current activities (hereinafter - the working group).

The standard-bearer of non-ferrous metallurgy in our country is the Almalyk Mining and Metallurgical Combine Joint Stock Company (hereinafter - Almalyk KMK JSC), which has a 70-year history as the main enterprise for the production of non-ferrous and rare metals. The production facilities of Almalyk KMK JSC are based on the deposits of copper-molybdenum, lead-zinc, gold and silver, located in the Tashkent, Surkhandarya, Namangan and Jizzakh regions [1].

At present, Almalyk MMC employs more than 700 people. Tasks such as creating the image and style of the enterprise-consumer are of great interest in the formation of the range of special clothing for miners.

The main functions of workwear are its protective properties and, of course, convenience, only after that, color preferences are put on the background. An important detail when choosing clothes for work is its strength, wear resistance and durability. To ensure all this, it is necessary to select the right materials for the desired weave of fibers and the right combination of different types of fabric bases (natural, blended, synthetic), insulation and the necessary accessories. Of course, the further operation of finished products will depend on the quality of sewing, and on the method of fastening the seams, and even on the quality of the selected accessories and threads. However, it is worth remembering that all damage and tears at the fabric joints along the seam can be corrected. But if the integrity is lost due to the quality of the material of the upper fabric, such damage is much more difficult to restore, and even after that, the clothes can lose not only their original appearance, but also their protective properties.

The type and type of fabric used when sewing workwear is very important. In order to more accurately determine the type of fabric suitable for sewing work clothes

for specialists in various industries, directions and types of activity, we will consider the technical characteristics and basic properties of the most common fabrics.

Special clothes are personal protective equipment designed to protect against harmful and dangerous factors for the health of an employee at the workplace.

In some cases, special clothing can be viewed by employers as a means of communication with end consumers and private investors, through attribution by elements of corporate identity.

According to GOST, overalls should provide the necessary level of protection of human life and health from harmful and dangerous factors, the absence of an unacceptable risk of situations that can lead to the emergence of hazards, be hygienic, not irritate the skin when applied, allow the user to normally carry out the main activity, must be certified in the manner prescribed by law.

Occupational safety experts are defined as the workplace conditions, the exposure to which can lead to illness or deterioration of the health of the employee. Hazards are specific conditions in the work environment that could result in death or injury to a worker.

For example, for workers in the mining profession, overalls are necessary to protect against abrasions, to protect against mine dust, to protect against cold air and water. In this case, the harmful factors from which the clothing protects will be cold air, dust, high humidity. Hazardous factors will be working mechanisms, rock bursts, reduced visibility for other workers, the danger of firedamp explosions, and others.

The growth of the workwear market, coupled with the expansion of the workwear materials market, has formed a stable offer of workwear that is diverse in style, cut, colors and options.

Consumers, large manufacturing and service companies saw new opportunities in the variety of offered forms of workwear. Now it is possible to make the aesthetics and appearance of workwear an object of control. It became possible to give overalls a unique look for a particular company, to make it in a corporate style. Managing the appearance of workwear, brings workwear closer in function to a uniform.

Overalls are generally used to protect the health of the worker and are issued by employers in compliance with government regulations (mandatory for all employers). Corporate clothing is used by employers to support the corporate style, that is, as a uniform, and, sometimes, in pursuance of narrow corporate labor protection standards voluntarily established by the employer [2].

A component of modern special clothing is often branding - applying a logo. Clothing with a printed logo becomes an advertising medium. Logos are applied to overalls by screen printing on fabric (silk-screen printing), thermal transfers, flocking, foiling, embroidery [3].

According to this regulation, overalls must meet several fundamental requirements:

- Have the necessary level of protection of human life and health from harmful and hazardous production factors;
- Avoid the possibility of the risk of situations that can provoke the danger;
- Be hygienic;

- Be hypoallergenic;
- Be comfortable in accordance with the expected range of tasks performed in it by a specialist;
- Be certified in accordance with applicable law.

Since each occupational profession may have specific factors that are dangerous or harmful to life, consider, as an example, the requirements for overalls for miners.

Clothing should protect against:

- Mine dust;
- Abrasions;
- Cold air;
- Water.

In this case, the harmful factors will be: cold air, dust and high humidity.

The most widely used fabrics for ordinary workwear are twill weave, cotton or mixed with polyester fiber composition, with a density of 210-250 grams. sq. m. General-purpose fabric in the terminology of the Russian system of occupational safety standards is called "for protection from general industrial pollution."

### Material properties test results

**Table 1.**

The name of indicators	Twill		Cloth		Calico		Jeans		Requirement according to GOST
Fibrous composition	Synthetics-70% Cotton - 30%		Synthetics -50% Cotton -50%		Cotton-100%		Cotton-100%		
Width, cm	150		150		150		160		
Thickness, mm	0,25		0,35		0,3		0,5		
Finishing type							Plain dyed		
Surface density, r/m <sup>2</sup>	207,5		308,6		310,2		360,8		GOST 3813-72
Abrasion, cycle	29 600		28 000		20 600		22 000		GOST 18976
Breaking load, H	The foundation	Ducks	The foundation	Ducks	The foundation	Ducks	The foundation	Ducks	GOST 3813-72
	1360	1010	1380	1050	680	490	1560	1200	
Color fastness, ball	Dry friction	Wet friction	Dry friction	Wet friction	Dry friction	Wet friction	Dry friction	Wet friction	GOST 9733,4
	5	4	5	4	5	5	4	4	
Air permeability, dm <sup>3</sup> /m <sup>2</sup> c	80,6		70,4		86,4		74,6		GOST 12088
Hygroscopicity, %	0,63		0,65		0,9		0,9		GOST 3816-81

Analyzing the characteristics of the tissues under study, the following can be noted:

- the surface density of the above fabrics meets the requirements of GOST 11209-2014, 207.5-360.8 g / m<sup>2</sup>
- the abrasion resistance of all fabrics complies with the standards of GOST 11209-2014 (must be at least 2000 cycles).

As can be seen from these tables, the original characteristics of some fabrics meet the requirements. Therefore, for a reasonable choice of materials, it is necessary to analyze the behavior of these materials during operation.

Sketches of overalls for miners were proposed and fabrics were selected for making samples of models in the conditions of the Wokcass.ru MCHJ (Tashkent). The samples were highly praised by industry experts.



Description. Jacket with buttons, patch pockets, inner top pocket. Reinforced shoulder pads and internal patch pockets in the elbow area for inserting cushioning pads, ventilation holes under the armholes. Trousers with a widened insulated waistband. With patch pockets on the front halves: outer side and inner in the knee area for inserting cushioning pads. Reinforcement pads: on the front halves in the knee area. On the back - in the seating area. A 50 mm SOP is laid along the suit.

## References

1. The Cabinet of Ministers dated May 26, 2020 No. 267-F order on "Implementation by the joint-stock company" Almalyk Mining and Metallurgical Plant "investment project" development of the "Yeshlik I" deposit in 2020 - 2024 strategy "https://lex.uz/ docs / -4825232
  2. [https://ru.wikipedia.org/wiki/%D0%A1%D0%BF%D0%B5%D1%86%D0%B8%D0%B0%D0%BB%D1%8C%D0%BD%D0%B0%D1%8F\\_%D0%BE%D0%B4%D0%B5%D0%B6%D0%B4%D0%B0](https://ru.wikipedia.org/wiki/%D0%A1%D0%BF%D0%B5%D1%86%D0%B8%D0%B0%D0%BB%D1%8C%D0%BD%D0%B0%D1%8F_%D0%BE%D0%B4%D0%B5%D0%B6%D0%B4%D0%B0)
  3. Prerequisites of Gold-Mining Cluster Formation in Russia Техника и технологию engineering& Technologies. 2017 10 (7) http://elib.sfu-kras.ru/handle/2311/68397
-