



## IMPACT OF PROTECTIVE CLOTHING AND ITS QUALITY IN WAREHOUSE WORKLOAD

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### Abstract

This article presents the problem related to protective clothing, describes the concepts of protective clothing and its division as well as analyses the accidents which occurred in the shipping warehouse. A questionnaire study was also conducted in relation to warehouse worker preferences regarding protective clothing.

### Key words:

warehouse worker, safety gear, protective clothing, accident at work.

### Introduction

The purpose of the article is to draw attention to the fact, that protective clothing is an obligatory element of work in a warehouse. Its selection plays a key role in ensuring the safety of employees. The article presents the impact of the quality of protective clothing on warehouse works. It describes the result of wearing incorrectly selected clothing and accidents in the warehouse that occurred as a result of inadequate safety gear, as well as a survey conducted among warehouse workers regarding their preferences in relation to protective clothing.

### Formulation of problem

Protective clothing acts as a replacement for personal clothing, covers the worker and protects him from hazards. It is not intended for work that results in intensive staining with substances harmless to health, nor is it intended for work in which there are factors that accelerate the deterioration of the clothing, or the

cleanliness of the manufactured product is required (Laing, 2008).

In accordance with Art 2377 § 1. of the Labour Code, the employer is obliged to provide the employee, free of charge, with protective clothing and footwear that meets the requirements of Polish Standard. This is to protect against the effects of harmful and hazardous to health factors that occur in the work environment, as well as inform the employee how to use personal protective equipment (Polish Law, 2020). Simultaneously, the employee is obligated to comply with the health and safety regulations and rules. In particular, the employee must use collective protection measures, personal protective equipment, use working clothes and footwear as intended (Krzyśków, 2013).

Protective clothing can be divided depending on: harmful factors and the guaranteed area protected by it. We also divide clothing taking into account the type of risk, which include chemical, biological, mechanical and thermal factors, electromagnetic radiation and electrocution, protecting against weather conditions, water and humidity, clothing used in potentially explosive environment, high-visibility clothing

(Bartkowiak *et al.* 2019).

Undoubtedly, protective clothing should be selected in terms of employee's body dimensions, height and particular measurements. On the other hand, the employer should start the selection of protective clothing by identifying the type of hazards and defining all exposed parts of the employee's body to the hazard.

According to the standards established by the European Directive 89/686/EEC, there are three categories of protective clothing.

The first category is protective clothing that is designed to protect against a minimum hazard. This category includes workwear and clothing made of impregnated, protective fabric. It most often protects against light dirt, harmless mechanical damage and weather conditions.

This clothing does not need to be certified. The second category is related to clothing, the task of which is to protect against specific factors that do not pose a

threat to the life of the employee and do not lead to serious and permanent damage to health. It includes cut-resistant aprons, high-visibility clothing, and protective clothing against specific factors that do not pose a threat to the life of the employee and do not lead to serious and permanent damage to health. It includes cut-resistant aprons, high-visibility clothing, and protective clothing against harsh chemicals.

The third category includes clothing that protects against the factors most threatening to the life and health of the employee.

Clothing in this category protects against ionizing radiation, temperatures above 100 degrees C, extensive splashes of hot substances, clothing protecting against temperatures below -50 degrees C and clothing designed to work under high voltage.

In Table 1 presents a list of allocation and consumption of protective clothing at work, in the position of a warehouse worker.

**Table 1.** List of allocation and consumption of protective clothing at work, in the position of a warehouse worker

Job description	Type	Clothing and gear set	Item service life
Warehouse worker	W	- beret	12 months
	or	- hat	12 months
	W	- apron	9 months
	or	- dungarees	9 months
	or	- clothing	9 months
	W	- leather boots on a rubber soles	12 months
	S	- protective gloves	tw
Work in outdoors	S	- raincoat	tw
	or	- rain jacket	tw
Work in outdoors and in rooms with insufficient heating during winter season	S	- insulated cap	2 ws
	S	- insulated clothes	3 ws
	or	- insulated jacket	3 ws
	or	- insulated vest	3 ws
	S	- rubber covered felt boots	2 ws
	S	- insulated leather boots on a rubber soles	2 ws
	or	- oil-proof insulated boots	2 ws
	S	- insulated gloves	tw

W – Work clothing or footwear

S – Safety clothing and footwear

ws – winter season

tw – till worn-out.

Due to the specificity of his duties, a warehouse worker needs clothing that will not restrict movement, will be comfortable, at the same time solidly made, of a dirt-resistant material and having numerous pockets for tools and utensils that make work much easier.

The selection of clothing is also important due to frequent temperature changes in the shipping warehouse.

The duties of a warehouse worker include accepting and checking deliveries of goods, unloading goods, planning warehouse space and placing goods in it, labelling and placing products in designated places, picking orders, loading orders for delivery trucks, operating devices, e.g. a pallet truck and forklift,

inventory control, stocktaking of the warehouse, cooperation with other departments (Michalik, 2019).

## Purpose of research

The article analyses two accidents that occurred in the warehouse. The causes of the accidents were poorly selected protective clothing, as well as the employee's inattention and non-compliance with occupational health and safety regulations. The first accident was caused by an incorrectly sized workwear. During the activities, the employee wore loose pants, which were additionally too long. His head, in turn, was protected by a helmet that did not have the appropriate size adjustment. While working, an employee tripped over a trouser leg and fell. The helmet slipped off his head during the fall. The result of the accident was a head wound, and the cause of the

loss of balance while wearing too large and too loose pants.

The second accident was the fault of the employee because the employee did not comply with the employer's requirements regarding the use of protective clothing during the activities. The employee did not use toe protecting shoes with toecaps. While transporting a pallet, a manual pallet truck ran into the foot.

## Research results and discussion

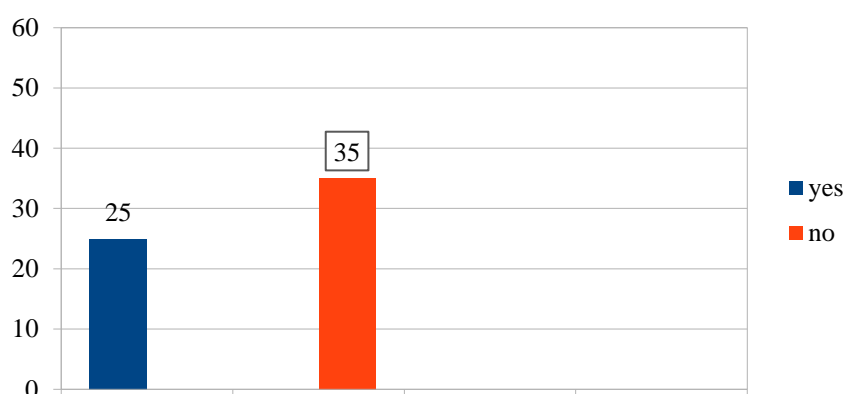
A survey on the preferences of protective clothing was carried out in 2021 among 60 employees of the

shipping warehouse. Thanks to the research, it was possible to determine what warehouse employees expect from protective clothing and what aspects are important to them.

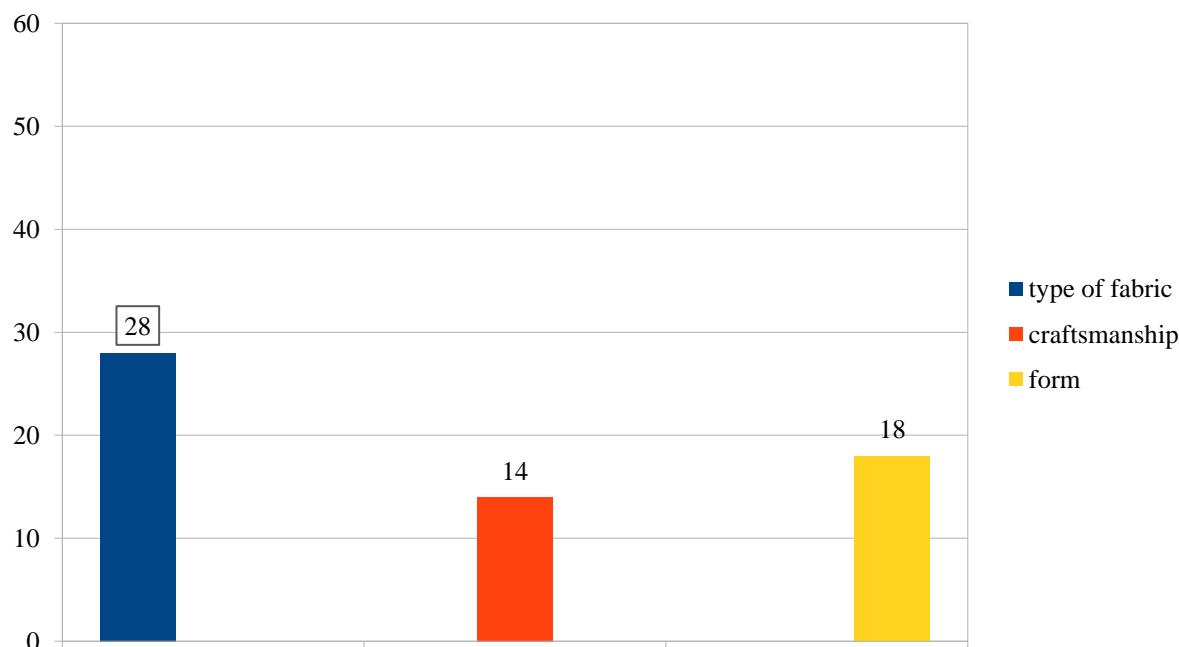
Figure 1 shows the interest of warehouse workers in the composition of the material used in protective clothing.

According to the conducted research, it appears that 25 respondents pay attention to the composition of the material used in the production of protective clothing, while 35 people do not pay attention to the composition.

Figure 2 shows what warehouse workers pay attention to, when wearing protective clothing.



**Figure 1.** Warehouse workers interest in material composition.



**Figure 2.** Warehouse worker preferences.

28 warehouse workers pay attention to the type of fabric in their protective clothing. For 14 employees, the quality of workmanship is important, while 18 respondents indicated design as an important criterion for protective clothing.

Figure 3 shows the important elements in the use of protective clothing that covers the lower limbs. Each

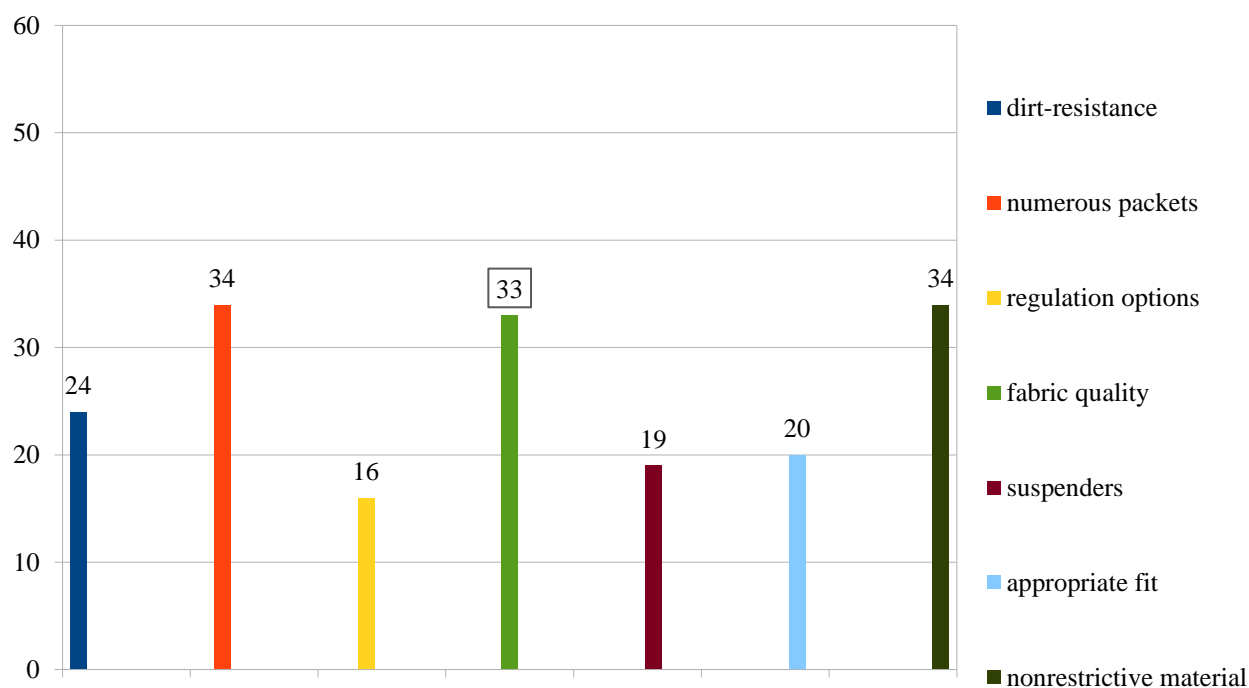
respondent could choose up to 3 answers.

Based on the survey results, 24 warehouse employees consider the dirt-resistant material to be important, and 34 respondents mentioned numerous pockets as an element to facilitate work. Respondents considered regulation option the least – 16 times – while 33 respondents indicated the quality of the material. For

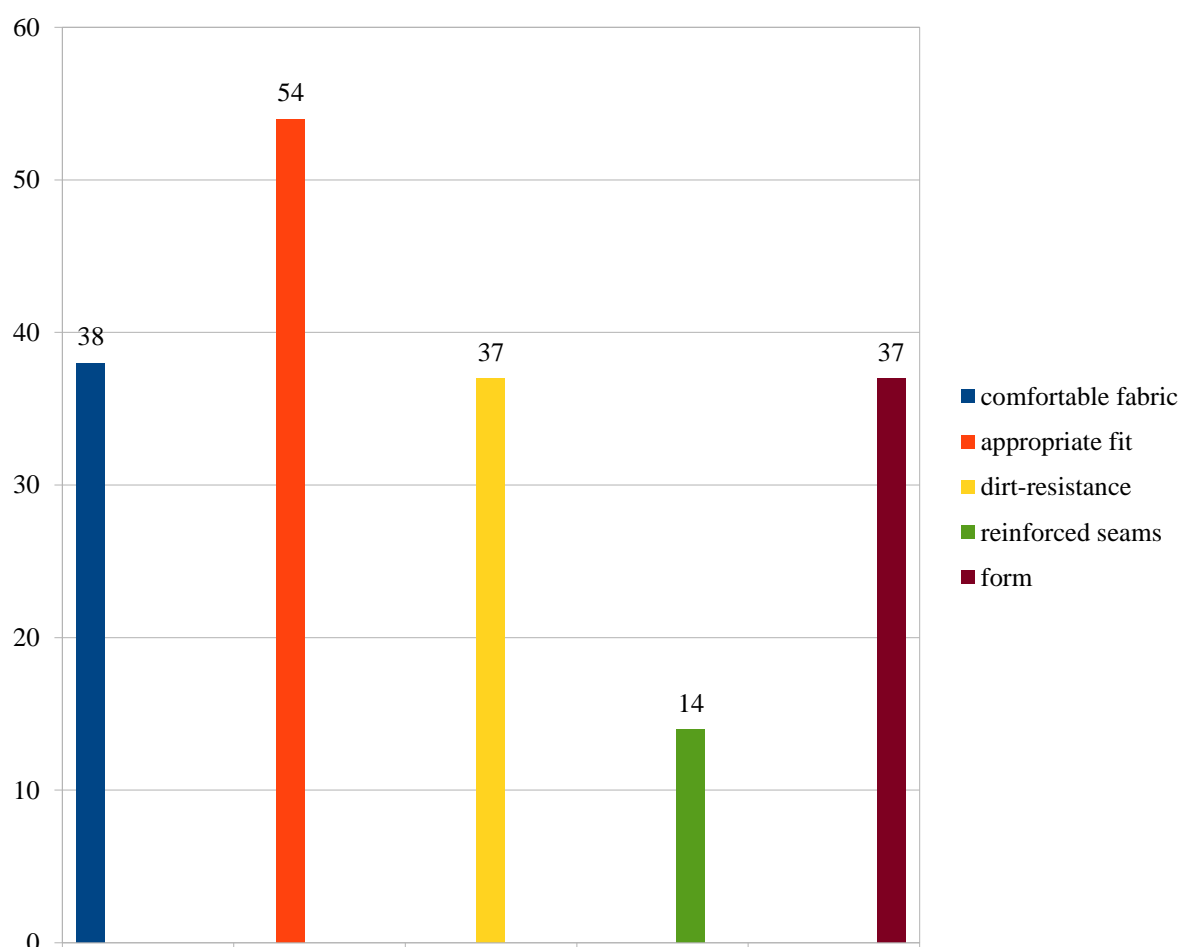
19 employees, suspenders are important in clothing, while one more person chose an appropriate fit. 34 people consider it important that the material allows

freedom of movement.

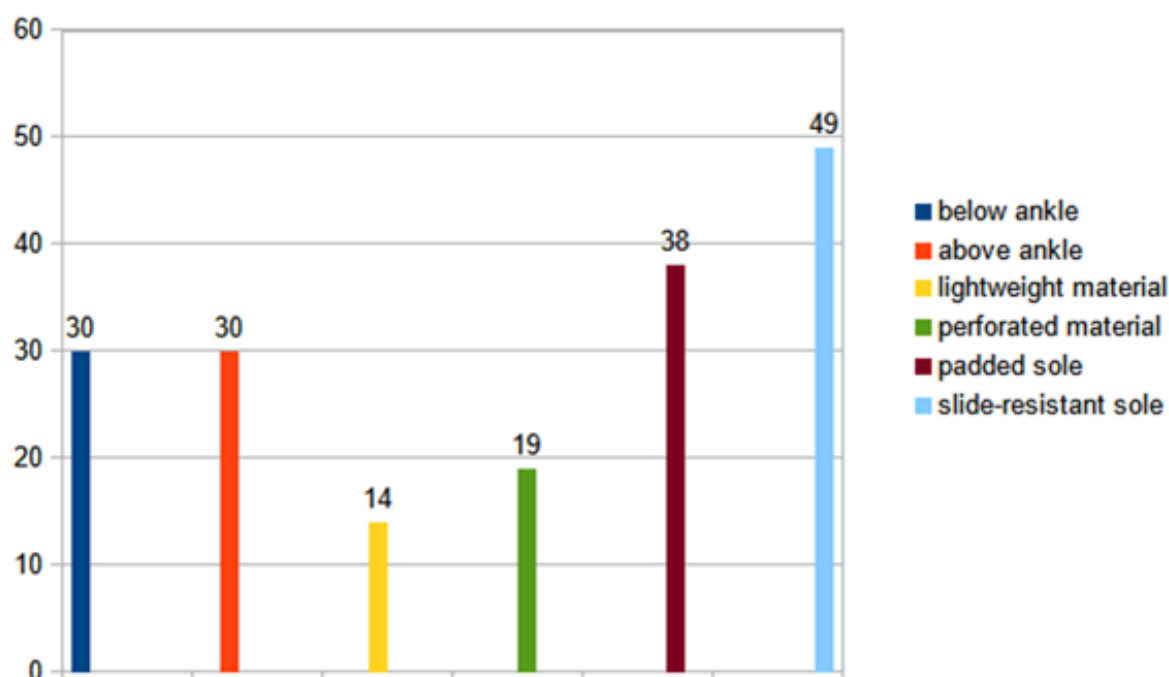
Figure 4 shows important elements in the use of protective clothing that covers the upper limbs and torso.



**Figure 3.** Important elements of clothing covering lower limbs.



**Figure 4.** Important aspects of clothing that protect the upper limbs and torso.



**Figure 5.** Safety footwear preferences.

The most votes – 54 – were cast for appropriate fit. For 38 respondents, comfortable fabric is an important factor in protective clothing. 37 people indicated dirt-resistance and form received the same amount of votes, while 14 workers indicated reinforced seams as important.

Figure 5 shows safety footwear preferences.

## Conclusions

The research shows that incorrectly chosen clothing can cause accidents at work. Employees willingly participated in the survey in which they were asked about their preferences for protective clothing. Workers mostly focused on convenience and comfort, while not forgetting about safety. It is important for employees to consider the craftsmanship in their protective clothing. Employees prefer a material that is comfortable, allows freedom of movement, and at the same time resistant to dirt. It is important for the respondents that the size of the clothing is properly selected, thanks to which it is safe and serves to protect the worker against possible threats. The respondents appreciate numerous pockets that allow them to have the necessary utensils and tools with them. In safety shoes, respondents appreciate the non-slip and cushioned sole. In order to meet the expectations of employees, it guarantees them, above all, safety, as well as comfort and improvement of the quality of work performed. Employees who will be able to actively influence the quality of clothing provided by the employer will certainly derive more pleasure and satisfaction from their duties.

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