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COMPARATIVE ANALYSIS OF THE TECHNICAL CHARACTERISTICS OF FIRE EXTINGUISHING EQUIPMENT IN THE LEADING COUNTRIES OF THE WORLD AND UKRAINE

***Summary.** This publication provides statistical data on fires in Ukraine and the relevance of the use of fire extinguishing agents in residential areas. A comparative analysis of the technical characteristics of extinguishing agents used in the leading countries of the world and Ukraine is given. It is noted that the use of a combined extinguishing method makes it possible to reduce the temperature impact on a person on the main evacuation routes.*

***Key words:** fire statistics, extinguishing fires, fire and rescue units.*

Introduction. An analysis of global information and analytical materials over the past five years indicates that every year about 36% of fires occur in buildings of the residential sector. Figure 1 shows the statistics of fires in Ukraine. Statistical data on fires show that when extinguishing fires in buildings of the residential sector in 60% of cases, units of the gas and smoke protection service, which work in compressed air devices, are used.

As a rule, such fires are accompanied by dangerous factors, in particular, the effect of high temperatures and smoke, which significantly complicates the conduct of rescue operations and fire extinguishing. In Ukraine, about 40 firefighters receive injuries of various types every year while extinguishing fires with the use of firefighting units.

An important tactical way to reduce such an impact on the personnel of fire and rescue units is to control the heat and smoke flows of a fire with the help of portable smoke and heat removal devices (fire smoke extractors), which are functionally designed to increase the local air pressure by injecting air into the personnel's work area or removing products burning from premises in fire conditions to normalize the temperature and air environment.

This establishes the need to substantiate the optimal value of the productivity of the smoke and heat removal means for the effectiveness of extinguishing fires in buildings of the residential sector by fire and rescue units during extinguishing by fire and rescue units of the State Emergency Service of Ukraine in conditions of high temperature and smoke by improving its individual elements.

Taking into account the above, conducting research aimed at improving the technical parameters of extinguishing agents aimed at increasing the productivity of air injection during extinguishing fires in the residential sector is an urgent scientific task.

Analysis of literary data and statement of the problem and the study of fires and the phenomena that accompany them was contributed by such famous scientists as Lambert, Patrick M. Kennedy and others. Their work was aimed at studying fire hazard factors that occur in premises and their impact on fire extinguishing.

However, it should be noted that the cited works did not investigate the issue of improving the technical parameters of extinguishing agents, namely increasing the performance of air injection during extinguishing fires in buildings and structures.



Fig. 1. Use of high-multiplicity foam generators for fire-fighting purposes

As a result of the analysis [1-5], the stages of further work are outlined, which involve studying the regularities of the dependence of the fire temperature regime in buildings on their geometric, aerodynamic parameters and fire load. This serves as a scientific basis for the study of fire resistance of buildings.

The structural features of buildings [6-10], their fire load, the existing temperature regime during a fire in buildings are analyzed, and the fire hazard of such structures is described. Based on examples of fires, it was concluded that in case of collapse of structures, the work of entire enterprises may stop, areas of cities may be left without light, equipment may fail, etc. Therefore, to ensure fire and man-made safety, it is necessary to guarantee the necessary limit of fire resistance of buildings.

Object of the research - researching the issue of improving the technical parameters of extinguishing agents in the world and in Ukraine.

Subject of the research - dangerous fire factors that occur in premises and their influence on fire extinguishing.

The aim of the research - establishing the regularity of the dependence of the productivity of extinguishing agents and their technical characteristics as a scientific basis for the improvement of such agents.

Research methods: analysis and generalization of literary sources, work with information resources; methods of mathematical statistics.

Conclusions: according to the results of analytical studies of methods and means of extinguishing fires in buildings and structures, it was established:

- water vapor and water;
- chemical and air-chemical foam;
- non-combustible and inert gases;
- carbon dioxide halo compounds;
- dry powders;
- sand, asbestos, thick fabric - felt.

The obtained results of analytical and experimental studies will be taken into account during the development of the national standard of Ukraine for means of extinguishing and detecting fires.

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