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Wood Processing For Construction

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ABSTRACT

The article presents the positive and negative properties of wood, the technology of wood preservation and antiseptic treatment, and also deals with the fire retardant composition "Pyrol".

KEYWORDS

Wood, anseptation, conservation, fire protection, chemical treatment, elasticity, cellulose.

INTRODUCTION

Wood is a wonderful, environmentally friendly material. Wooden houses are the most environmentally friendly and cleanest dwellings. But this wonderful natural material, in addition to its advantages, has obvious disadvantages - the tree lends itself to burning easily, and is also susceptible to the effects of

fungus, mold, larvae, bugs, shashel, woodworms and other insects. Therefore, wood must be protected from these factors: from fire, decay, destruction. For this, the materials of both the authors and other researchers were analyzed [1-10]. The essence of the analysis was to compare the results of

the shrinkage value and the actual volume of wood used in our region.

It is no coincidence that wood is used in the construction of buildings and structures. Why do you need wood if you have stone and brick? But the use of wood in modern construction has its successes, since wood has a number of qualities. Firstly, wood is a fairly durable building material, it has a lower specific gravity compared to stone and concrete. Secondly, in terms of thermal insulation properties, wood leaves far behind other types of building materials. Thirdly, wood is a very resilient material. Fourthly, with the correct selection of the workpiece and normal operation, timber structures will serve quite a long time. And finally, fifthly, wood is considered a local building material for the manufacture of building structures and to this day remains relatively inexpensive in terms of cost.

But wood also has a number of disadvantages. Wood has an inhomogeneous fibrous structure, which leads to an uneven distribution of the density of the material and leads to a deterioration in the properties of the wood itself and the difficulty of using it for construction purposes. Also, wood absorbs and releases moisture in large quantities. This leads to an increase or decrease in the volume of the material, respectively, which also complicates the construction process. It should be noted that when observing the above, during swelling and drying out, the volume change also occurs unevenly. In this case, internal mechanical stresses arise and cracking of the tree is observed. Wood is easily rotted. This is strongly expressed in violation of storage conditions, prolonged exposure to moisture or after improper processing. The main drawback is the high flammability of

wooden buildings, especially if fire safety rules are not followed and fire is handled carelessly.

Every builder needs to know these positive and negative properties and, if necessary, use them to improve the building and structure under construction. As can be seen from the above properties, if used improperly, the disadvantages of wood materials can completely negate the advantages. But a way out of this situation has been found.

Modern technologies make it possible to carry out various processing of wood to improve its quality, service life and ease the operating conditions. Wood is an organic, porous material of plant origin that can be subject to biological, mechanical or chemical stress. He first place among the processes of wood processing is chemical treatment. There are many types of it. One of the most popular methods is the technology of wood impregnation in order to avoid the destruction of the latter by putrefactive bacteria, bark beetles, as well as unfavorable environmental factors.

The technology consists of two processes - antiseptic treatment and wood preservation.

The first process, antiseptic treatment, is as follows. A special substance is applied to the surface of the tree, which destroys existing harmful microorganisms and prevents the appearance of new ones. A thin film formed on the surface of the wood is quite capable of coping with the task.

Wood preservation is a process in which special substances are introduced deep into the structure of the tree. Preservation is carried out by methods of autoclave and diffusion impregnation and immersion in baths of

various degrees of heating. The latest technologies allow canning under vacuum conditions under a certain pressure. This method provides better impregnation of the wood material.

In modern history, the new fire-retardant composition "PYROL" has found its application. The composition "Pyrol" does not perform fire-retardant functions in the traditional form. Does not form any foam or coke on the surface of wood structures, does not emit inert gases, does not lower temperatures, does not exhibit inert gases, does not lower temperatures, does not exhibit any other fire retardant factors. It cannot be attributed either to paint, or to coatings, or to varnishes, or to impregnations.

In this case, fire-retardant functions are performed by low-combustible cellulose formed in the surface layer as a result of chemical interaction with Pyrol.

Wood, the surface layer of which consists of a slow-burning cellulose, becomes hardly susceptible to flame and, as it were, protects itself from fire. Since the chemical reaction of the composition with cellulose is irreversible, and the newly formed cellulose compound is chemically stable, it can be hoped that it will remain on the surface of the wood indefinitely. In other words, the period of the fire-retardant action can be commensurate with the lifetime of the wood itself, and all this time the fire protection of wooden structures will take revenge.

At the same time, the newly formed form of low-combustible cellulose, which is in the surface layer of the wood, remains chemically bound to the main body of wood. As a result, it

does not wash out, it is resistant to other types of atmospheric influences, and the service life of fire protection of wooden structures should not depend on operating conditions and can last equally long both inside and outside the premises.

The composition "Pyrol" compares favorably with all other fire retardants in its versatility. It equally effectively reduces the combustibility of any wood, regardless of its species, density, presence of natural defects, as well as physically processed wood - laminated veneer lumber, plywood, veneer, fiberboard, chipboard and others.

CONCLUSION

After processing, the wood does not change its appearance at all, and naturally, there is no such effect as salting out. This allows us to recommend the use of the composition before finishing facades, interiors and other wooden surfaces, which are subject to increased aesthetic requirements.

Wooden surfaces treated with the "Pyrol" compound can be coated with any texture and paintwork materials. Wood to this day remains one of the most popular materials in construction. It has many advantages, such as good thermal insulation properties, environmental friendliness, strength, elasticity and a relatively low price. But, along with the undoubted advantages, wood has a number of disadvantages, such as fire hazard, susceptibility to rotting and fragility if used improperly.

Modern technologies make it possible to reduce the imperfections of wood, making it more durable and less susceptible to external

influences, such as excessive moisture, dryness and putrefactive microorganisms.

After chemical treatment, wood can be successfully used for a much wider range of purposes.

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