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Main Features of the Protection of Wooden Structures

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Annotation: *The existing types of protective materials for wooden structures and elements are described. The features of materials for protection against moisture, decay, pests, and fire are described.*

Keywords: *Wooden structures, processing of wooden structures, types of protective materials.*

Wood is not only one of the oldest and most popular materials used in construction, but also one of the most “defenseless”. Only after special treatment, wood acquires all the necessary performance properties; without it, it is very susceptible to environmental influences. This happens because a layer of bark protects the wood before processing. In the manufacture of timber, the tree is debarked and dissolved into several parts. Therefore, the wood is left without its natural protective layer, as a result of which they absorb moisture, rot or lose their original properties under the influence of ultraviolet radiation. Of course, there are varieties with increased density, hardness and resistance to moisture, but most often they are not built from them.

There are several types of protective materials:

- 1) Sealants - used to seal seams, cracks, crevices, ends.
- 2) Antiseptics - used to increase moisture resistance, prevent biological damage. There are several types of antiseptics:
 - a) highly specialized;
 - b) universal.
- 3) Primers - used to increase adhesion.
- 4) Protective and decorative means - varnishes, paints (acrylic, oil, alkyd), oils, impregnations, waxes, azures, emulsions, nitro-varnishes, stains.

Various materials are used in different periods of the life of wood: sealants, primers, antiseptics - preparatory materials, are used both during the period of building a log house and before applying finishing coatings. Protective - decorative are used as a finishing coating.

Moisture protection. There are special solutions that protect wood from moisture, they can be: penetrating or film-forming. The first group provides a more reliable barrier against the penetration of liquid into the wood structure. The second group requires repetition over time, as the film may wear out.

Ways to protect against decay. The best means of protection against the appearance of fungi, beetles or decay are antiseptics. Antiseptic impregnations are represented by two groups: 1) these are salt solutions with other substances, for example, fungicides, algicides or combined products, this type requires subsequent processing; 2) these are coatings that form a film.

Advantages of soils - antiseptics:

- 1) Protect the deep layers of wood, as they penetrate into the structure.
- 2) Able to provide durable protection against biocorrosion.
- 3) Adjust the absorbency of the wood.
- 4) Increase adhesion.
- 5) Save consumption of finishing coatings, as well as increase their service life.

Fire retardants are salt impregnations that contain fire retardants; under the influence of a flame, such a solution forms a thin film that can prevent the spread of flame for some time. Impregnations exist in the form:

- solutions;
- plasters;
- paints;
- coatings.

There are also complex fire and bioprotective materials that are able to provide comprehensive protection of wood, the disadvantages of such coatings are: the inability to assess the degree of impregnation of the structure, since a film forms on the surface; different service life of the components of the complex material.

Pest control formulations are products with insecticidal properties. Most of the existing means are designed to prevent or destroy various types of insects at the developmental stage. In the latter case, insecticidal solutions are applied in a large number of layers, diluted with less water than in prophylaxis. Getting rid of beetles and larvae in heavily affected wood is more difficult: the drug must be injected into the inlets and outlets by injection.

Various impregnations, solutions, azures, varnishes, paints contain substances that protect wood from insects, rapid wear, and decay. Using protective compounds in the construction of a house, you can make it reliable, safe and impregnable.

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