Provedennыe Studies for drevesynovedenyya, îíè Significantly sokraschayut trudovыe and эnerhetycheskye zatratы Definition at major indicators fyzycheskyh properties.

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The method for determining the basic parameters of the physical properties of wood in indexes of macrostructure: porosity across the rate of growth and the maximum moisture content of wood, the definition of the maximum water absorption and basic wood density by the number of growth rings in 1 cm was proposed.

Silver birch, wood porosity, rate of growth, the basic density, maximum water absorption.

The proposed method of determining the main parameters of the physical properties of wood in terms of macrostructure: determination of porosity across the width of annual layers; determine the maximum water absorption and basic wood density in the number of annual layers in 1 cm.

Betula pendula, porosity wood, width of annual layers, basic density, maximum water absorption.

UDC 674.07: 684.4 (45)

STUDY OF MODIFIED FOR linseed oil adhesion strength of the coating of wooden structures

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This paper presents the main characteristics of paints based on drying oils. Influence of modifiers on water resistance, heat resistance and adhesion strength of coatings for wood structures. The selected

optimal content of rosin to improve the physical and mechanical properties of films based on modified linseed oil.

Wood, linseed oil, rosin, water resistance, heat resistance, adhesive strength.

Problem. With all the benefits of wood they have some disadvantages: hygroscopic, instability UV, warping, etc., resulting vtrachalysya its consumer properties [1]. To avoid this, wooden objects were covered with various solutions capable of drying to form a protective layer. It then began the long journey of research of finishing materials from natural waxes and oils to complex, technology and super-strong modern synthetic paints (coatings).

Synthetic varnishes and enamels - are substances which are the main components of synthetic resins, obtained by chemical reactions. These include the following resins:

karbamidoformaldehidni, melamine-formaldehyde, alkyd, epoxy, polyester, polyacrylic, polyurethane and many others, including combinations thereof. These materials are satisfactory physicochemical, maintenance, decorative properties, which is very important for wood products, yet they do not meet all the requirements for environmental safety. Therefore, to improve the environmental situation in the creation of protective and decorative coatings, should increase the share of natural eco-friendly materials for finishing wood.

Analysis of recent research. In the process of creating a protective and decorative coating with products of natural origin primarily find use vegetable oils and their products. In addition they also used cellulose, natural resins and rosin, waxes and others. Another advantage of using natural materials is their raw recoverability.

But for now, Ukraine has no production of paints based on natural oils without adding synthetic additives. Made only linseed oil varnish, which can be used as an independent finishing materials, but only as a basis under the lacquer or enamel, or as a solvent for thinning thick paint. However, in the raw state oil dries up a few days and after drying the film has no sufficient hardness of the surface layer [2]. To effectively use hardeners, mainly active metal salts of zinc, cobalt, manganese and others that serve as catalysts to accelerate the drying of the film. But coverage based on linseed oil is too thin and soft, good to protect against weathering and other factors. Therefore, to increase the thickness and physical and mechanical properties of the film should pick modifiers are well combined with oils and improve its quality properties.

Great interest in oil and wax, varnish orhanorozchynnyh as alternative materials, due to the variety of wood that is used for making woodwork and building structures and the most exposed to weathering.

So, how to improve the quality characteristics of natural paints, especially oil, is very important and needs to detailed research and study.

The purpose of research. Research performance properties of coatings designed wood paint and varnish materials based oils. Given that the woodwork and constructions, most are operated under atmospheric conditions, an important characteristic of quality protective and decorative coating is its resistance to moisture, temperature, and adhesive strength as a result of the above mentioned parameters. Therefore, to study the basic performance, in this paper were conducted experimental studies of water resistance, heat resistance and adhesion strength of wood coatings designed linen modified oils.

Materials and methods research. For research use linseed oil (GOST 5794-81), which polimeryzuvaly with the addition of lead-cobalt drier. In the modification pine-gum rosin (GOST 19113-84N). Samples of oak wood.

1. Determination of moisture resistance coatings. When moisture resistance ability to understand refinishing (colors) withstand without changes to water. Determination of water resistance of coatings is under GOST 21065-75 using glass and distilled water [4].

After applying coatings on both sides of the wood, sample size 90h120mm them dried and kept at a temperature of (20 ± 2) ° C, relative humidity (65 ± 5)% within five days.

Refinishing placed at a height of 2/3 cup of distilled water. After testing water samples were dried filter paper.

The changes of the model (change the brightness, color tone, whitening film, bubbles and t. N.) Recorded visually or using a magnifying glass with a 3-4 fold increase.

*2. Determination of adhesion of coatings (method of lattice cuts).*At each site surface models that was tested, at a distance of at least 10 mm edge cutting tool carried by a ruler or template for at least six parallel cuts to the lining of not less than 30 mm at a distance of 1.2 and 3 mm apart. As a result, the coating formed grid of squares of equal size.

Control eruption of the coating to the substrate was carried out using the magnifying glass of 2,5-4-fold increase.

After applying nadrizuvan to remove pieces of coating vidsharuvalysya, soft brush is carried out in forward and reverse directions, and diagonally five times. Adhesion assessed using a magnifying glass if necessary, by four-point scale [4].

*3. Determination of the thermal stability of coatings.*Heat resistance, heat resistance or the ability refinishing withstand exposure to high temperatures without changing the appearance and adhesion of the film. Heat resistance was determined adequately GOST 9590-76 [4]. After applying coatings, the film was dried and kept for 2 days. Like coated aluminum set a glass of water, heated to 60 ± 5 ° C and kept for 2 hours. After testing samples examined and assessed on a 5-point scale.

Research results*.* To improve the performance of coatings based on linseed oil for the modification injected resin in an amount of 1.0, 2.0 and 3.0 parts by weight (ppm). The impact on the amount of resin film quality indicators were determined during the experimental studies. The influence of resin to water and temperature resistant coating showed that the contents of the modifier in an amount 2.0 and 3.0 ppm significantly improves the stability of the film to the moisture content of rosin but increase slightly reduces the thermal stability (Table. 1).

1. The impact modifier content in water and heat resistance of the coating.

Resistance coating on a 5-point scale	Paint composition containing modifier, ppm			
	Varnish	Linseed oil + 1.0 ppm rosin	Linseed oil + 2.0 ppm rosin	Linseed oil + 3.0 ppm rosin
Water resistance	3	2-3	1	1
Heat resistance	2	2	1	2

From the experimental data obtained it can be concluded that the film is based on pure linseed oil has a small thickness and therefore does not form the necessary protective cover. Therefore, moisture permeability and the effect of temperature over this film does not protect the wood. The content of rosin in an amount of 1.0 ppm also necessary to create a film thickness of operational and moisture that penetrates the coating degrades its quality properties. The increase in flaxseed oil rosin to 3.0 ppm and more improves water resistance of the film, but reduces thermal stability, it is because the melting point of resin at 55° C [3], and therefore, heating leads to deterioration of the protective and decorative coatings.

To confirm the results obtained in the expedient provide data on the effect of resin content and film thickness. The film thickness was determined after application and drying oil composition by using the tool microscope MIS-11 according to GOST 13639-75. The data obtained are presented in Table. 2.

As can be seen from Table 2 in the thickness of the coating resin introduced in linseed oil in an amount of 2.0 ppm increases significantly with respect to the film thickness created linen linseed oil. These data support the findings and conclusions that with increasing modifier

content improved performance properties of protective and decorative coating of wood, such as water and heat resistance, adhesive strength and chaff.

2. The determination of coating thickness and depth of penetration of finishing materials in wood substrate.

Type of finishing materials	Coating Thickness	The depth of penetration into the pores	The thickness of the outside
Flaxen	86.13	57.90	28.23
Drying oils Linen	81.23	44.65	36.58
Modyf. oil (1m.ch. kanif)	91.60	49.26	42.35
Modyf. oil (2m.ch. kanif)	93.93	48.11	45.80
Modyf. oil (3m.ch. kanif)	91,92	45.51	46.38

To determine the adhesion by methods have been conducting tests of coatings designed linen oil modified with different content of rosin. Using the grading scale adhesion coating obtained the following results: samples of material consumption of 100-200 g / m2 answered score - 1.0; samples of material consumption of 300 g / m2 answered Ball - 2.0. From the obtained research can be concluded that the interaction of paint based on modified linseed oil with the tree lined creates adheziyno-resistant coatings.

Conclusions

As a result of a work of literature, theoretical and experimental studies it can be concluded that the choice of rosin as modifying additives flaxseed oil improves performance properties of protective and decorative coatings wood. The content of rosin in an amount of 2.0 ppm increasing film thickness and increases water temperature resistant coating and improves adhesion strength coatings to wood. Modified linseed oil should be used for finishing woodwork and building structures to produce environmentally-safe and resistant to weathering wood coatings.

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In the work predstavlenы main characteristics lakokrasochnыh materials based on vыsыhayuschyh oils. The influence of research on modyfykatorov vodostoykost, termostoykost and adhezyonnuyu prochnost coatings for timber structures. Vыbrannoe optymalnoe Contents kanyfoly for Improvement of physical and mechanical properties plenky modyfytsyrovannoho based on linseed oil.

Hardwood, Lnyanoe oil kanyfol, vodostoykost, termostoykost, adhezyonnaya prochnost.

The paper presents the main characteristics of coatings based on drying oils. The influence of modifiers on water resistance, heat resistance and adhesion strength of coatings for structures with wood. The selected optimum content of rosin to improve the physical and mechanical properties of films based on the modified linseed oil.

Wood, linseed oil, rosin, water resistance, heat resistance, adhesive strength.

UDC 674,047

CLASSIFICATION OF MAJOR INDUSTRIAL wood drying in complexity

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Shows the version of the classification of main industrial timber drying complexity. The determining factors are basic (conditional) density, porosity, shrinkage ratio values in plain radial direction relative to the fibers. Wood species is divided into two classes rated "A" and "B".

Density, moisture, tree species, rating, volohoprovidnist, drying shrinkage, porosity, medullary rays macropores.

Trying to create a classification for industrial wood drying in complexity KTM given in [1] where the classification assigned by the division of tree species density [2, 4]. However, apart from density to volohoprovidnist wood is affected by many other factors.

First of all, the volohoprovidnist affect the structure of wood: cross-sectional size and number of vessels per unit area, the distribution of vascular perforation type of wall area of contact of vessel walls, the presence of impurities in the cavities of the vessels. Thanks to