Introduction poluchennыh results of research in production. Razrabotanы resursosberehayuschye and ecologically Safe technology with Using Almost recommendations on view in derevoobrabotke.

Vtorychno yspolzuemaya Timber BUILDING, sistemny Approach; matematycheskye models, technologies derevoobrabotky, praktycheskye recommendations.

A system approach to PCW recycling was used. Technological capability of using PCW in woodworking production processes has been experimentally confirmed and commensurate product specimens were obtained: curved blanks, furniture panels, battenboards. Basic physical and mechanical properties were determined for the products obtained by the developed production techniques. To introduce the investigation-obtained results into production process, a set of operating parameters has been proposed. Resource-saving and environmentally benign technologies have been developed with practical recommendations regarding PCW utilization in woodworking industry.

Post-consumer wood, potential, system approach, physical and mechanical models, woodworking techniques, practical recommendations.

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Infrared Spectroscopic Study process of structuring the adhesive thermoplastic FILM

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The results of infrared study processes structuring thermoplastic adhesive film, depending on moisture. The analysis of the results of research and regularities of moisture on thermoplastic adhesive connection wood.

Wood, adhesives, thermoplastic adhesive films, strength, durability, spectra, hydrogen bonds, the absorption band, the stress-deformation state.

Durability thermoplastic adhesive joints with wood moisture affect change in the environment, wood, structure and sorption capacity. Additional moisture which popadatyme in adhesive seam affect the physical, chemical and physico-mechanical processes in adhesive bonding. Changes in these processes occur at the expense of OH,

which, along with the forces of intermolecular bonds can form in the presence of a small water content in the adhesive seam, hydrogen bonds, which will push up the value of cohesion in the seam adhesive, adhesives and adhesion to wood . At the same time excessive moisture in the adhesive seam leads to an increase in the linear size and growth of internal stresses in the wood as well as in the adhesive seam, which contributes to weakening and breaking intermolecular bonds between the components of the adhesive seam and seam adhesive and wood [4,5,6] .

Confirm the possibility of formation of additional hydrogen bonds, as in the formation of thermoplastic adhesive joints of wood, and in the course of its operation, by using experimental studies of physical and mechanical properties of thermoplastic polyvinyl acetate (PVA) adhesive tape during cyclic moisture and temperature on Thermoplastic adhesive tape [1,2,3].

In studies of physical and mechanical properties of thermoplastic PVA adhesive tape, confirm the possibility of the formation of additional hydrogen bonds in adhesive joints of wood under the influence of high humidity by using spectral analysis.

For this formed adhesive film thickness 0.5mm. structured with thermoplastic adhesive composition brand Jowacoll 102.20 from 195.30 hardener and unstructured – brand Jowacoll 102.20 without hardener. Glutinous tape until the adhesive seam formation was kept for 72 hours. in the laboratory. Then control samples PVA film kept without air at room temperature and humidity. Other examples of PVA films were divided into two parts. Some were subjected to the influence of moisture load in accordance with standard GOST 17580-82, whereby the sample film for 20 h. soaked in water at room temperature, while others were kept for 72 hours. in vivo.

The specimens PVA adhesive films were subjected to infrared (IR) spectral analysis, which was carried out using a spectrophotometer "Specord-M80" (the production of. Karl Zeiss, Jena, Germany) in the range 4000 - 400 cm-1.

As unstructured PVA adhesive film after soaking practically dissolved in water, the spectral analysis of control samples were subjected to structured and unstructured PVA adhesive film that vytrymuvalas in vivo, and examples of structured PVA adhesive film after soaking.

Physico-chemical properties of hydrophilic polymers substantially depend on the nature of the interaction of individual functional groups of these compounds with molecules of hydration water. In the cells of the spatial grid polyvinyl acetate polymer, partly hydrolysed ester groups,

which serves as a major component adhesive for bonding composites wooden structures, hydration occurs special for each case net hydrate structures that affect the strength of products during their operation in dynamic and static force fields.

It is known that the presence of hydroxyl groups in the molecule organic compounds leads to the appearance of absorption bands caused by vibrations of atoms relations O - H and C - A. The most characteristic bands appear in the range 3600-3000 cm -1 (valence vibrations O - H group) and in the range of 1400-1000 cm-1 (fluctuations associated with the group (C - O - H). hydrogen, which is part of the hydroxyl group has the ability to form hydrogen bonds, as with neighboring hydroxyl oxygen groups and other functional groups - electron donor. The formation of hydrogen bonding affects the position and shape of the bands stretching vibration of O - H, which shifted to less frequency range.

Fig. 1 shows IR spectra of PVA structured and unstructured adhesive films exhibited saturated steam for 24 h.

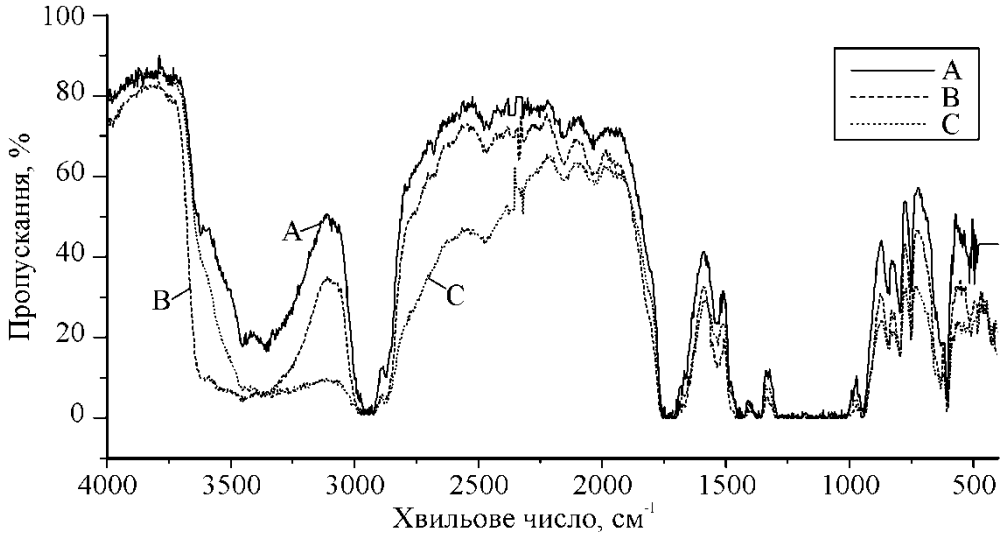

Fig. 1. IR spectrum of thermoplastic adhesive film: A– unstructured adhesive film without water vapor in the – unstructured adhesive film to water vapor, C – structured adhesive film to water vapor.

For water vapor unexposed sample unstructured adhesive film (spectrum A), the absorption band of O - H observed in the range 3600-3120 cm-1, appear small peaks at 3620 and 3520 cm at the shoulder-1, which are characteristic of residual unbound (O - H) groups in macromolecules hydrolysed PVA, the changing nature of the spectra and the appearance of intense absorption bands in a long wavelength range at 3450 and 3650 cm-1 is a result of the formation of dimers and poliasotsiativ involving water molecules, which is part of the glue.

Participation hydroxyl group, which is part of hydrolysed PVA macromolecules in the formation of intermolecular hydrogen bonds is

manifested in a significant increase in the intensity of the absorption bands in the range 3600-3120 cm-1 for holding unstructured film in terms of 100% humidity and water vapor adsorption (Fig. 2).

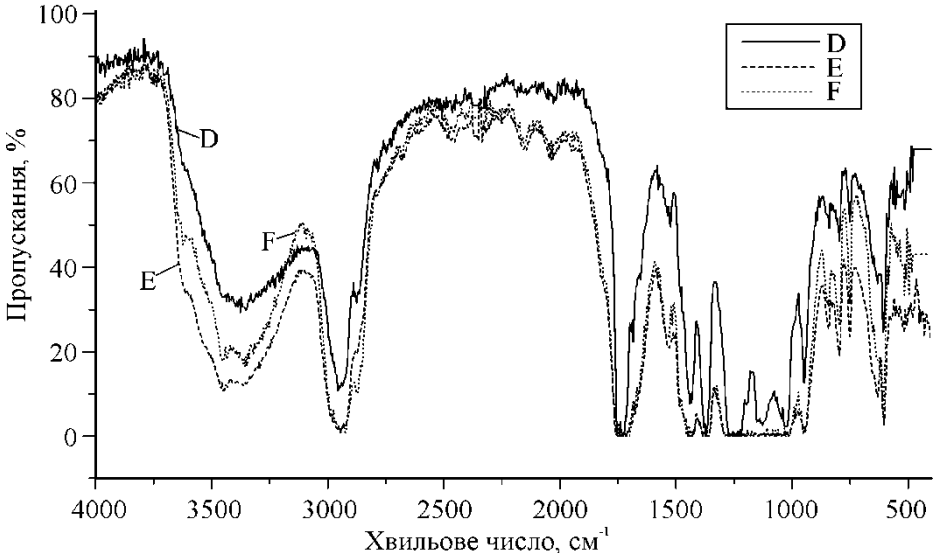

Fig. 2. IR spectrum of thermoplastic adhesive film: D– structured adhesive film without soaking; E – structured adhesive film after soaking; F – unstructured adhesive film without soaking.

The formation of a large number of hydrogen bonds associated particularly evident when holding water vapor in structured PVA adhesive film (spectrum C). There is a shift of the absorption bands associated (OH) groups towards lower frequencies (shear initial boundary absorption band from 3620 to 3420 cm-1 can be marked complete disappearance of the peaks of 3620, 3520 cm-1 absorption of non-associated (OH) group), both due to the formation of intermolecular hydrogen bonds in the range 3000-2500 cm-1 band appears strips overlapping each other.

A similar pattern is observed in the films soaking in water, with the peculiarity that samples completely unstructured "blurred", and in structured samples evident increase in the intensity of the absorption bands of hydroxyl groups associated with simultaneous leaching of soluble fraction of the polymer. In the spectra of all samples present carbonyl absorption band with a maximum at 1740-1750 cm-1, and a broad group of ester C-O–C in the range of 1300 -1050 cm-1.

Based on spectral analysis, we can confidently assert that the formation of additional hydrogen bonds in the adhesive film based on a structured PVA glue when it hit a small amount of moisture. A similar pattern must occur in the adhesive seam as PVA adhesives chemical structure of macromolecules resemble the main component of wood - cellulose.

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Results of the study Pryvedenы ynfrakrasnoho processes strukturyzatsyy termoplastychnoy kleevoy plenky action in dependence from moisture. Osuschestvlen results of research and analysis ustanovlenы zakonomernosty of influence of moisture on Thermoplastic compounds kleevыe timber.

Timber kley, Thermoplastic kleevыe plenky, prochnost, Durability, spektrы, vodorodnыe communication, bar only pohloschenyya, stress-deformatsyonnoe state.

Presented here are the results of infra-red research on processes of structuring thermoplastic glue tape depending on the action of moisture. The analysis of the research results has been carried out and patterns of moisture influence on thermoplastic adhesive wood jointing have been established.

Wood, glues, thermoplastic glue tapes, durability, strength, durability, spectrums, hydrogen bonds, bars of absorption, stress-storing state