

The feasibility of using effective packaging to protect wooden furniture from moisture effects "An applied study on samples of wood"

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Abstract:

The wooden furniture industry in Egypt is increasingly focusing on product quality for export purposes and tailoring products to meet user needs. As a result, manufacturers are more inclined to produce ready-to-assemble wooden furniture, requiring the furniture to be shipped in small boxes for users to assemble without the need for specialists. Additionally, there is a growing emphasis on the quality of the wood used in manufacturing and its resistance to varying environmental factors. Among these environmental factors, the detrimental impact of moisture on wood appears as a major obstacle facing furniture manufacturers, especially those exporting their products. Thus, attention to wood protection techniques from moisture after packaging becomes vital to maintain the quality and durability of furniture amidst climate changes and fluctuating environmental conditions, particularly during export where furniture remains in packaging boxes for extended periods, exposing it to various moisture effects. Therefore, this research addresses a vital aspect in the development and improvement of ready-to-assemble furniture industry, which is the use of effective packaging techniques to protect it from moisture. In the context of continuous technological advancement, these techniques serve as innovative solutions to enhance the function and quality of furniture for prolonged periods, especially during storage. The study aims to explore and analyze the impact of using effective packaging techniques on the wooden components of ready-to-assemble furniture and how to enhance them to effectively combat moisture effects. The focus will be on the effectiveness of these techniques, their integration with furniture packaging processes, and their impact on economic and environmental aspects.

Problem: Wooden furniture pieces, especially those intended for export, are susceptible to damage due to prolonged storage in boxes, making them vulnerable to moisture effects during storage. There is an urgent need for an effective scientific study to evaluate the impact of using effective packaging techniques in protecting wood from moisture effects during storage and export.

Query: Does effective packaging impact the protection of ready-to-assemble wooden furniture from moisture during long-term storage? Can the impact of using these materials in protecting wood from moisture effects be measured

Objectives: To assess the feasibility of applying effective packaging to protect ready-to-assemble wooden furniture from moisture during long-term storage. To measure the impact of using various effective packaging materials on protecting different types of wood from moisture effects.

Significance: Enhancing furniture manufacturing processes, exportation, and developing techniques to protect it from environmental factors.

Tools: Samples of woods used in the manufacturing of ready-to-assemble furniture. Samples of effective packaging materials used in packaging this type of furniture.

Results: Calcium hydroxide salts achieved the highest moisture absorption rate, followed by rock salt, and finally silica gel for effective packaging of plywood and white wood furniture. For MDF packaging, silica gel achieved the highest moisture absorption rate, followed by calcium hydroxide salts, and finally rock salt. For white suede wood packaging, calcium hydroxide salts achieved the highest moisture absorption rate, followed by silica gel, and finally rock salt.

Keywords:

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