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HARDNESS AND BRIGHTNESS DURABILITY PROPERTIES OF OPAQUE PAINTS USED IN FURNITURE INDUSTRY

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In furniture industry resistance of wooden surfaces against external effects depends on the strength of paint and varnish layers towards possible impacts. In this study cellulosic, synthetic and acrylic types opaque paints were applied on the wooden surfaces of Fine *(Pima nigra L),* Chestnut *(Castenea saliva L)* and Beach *(Fagus orientate L).* Later, physical and optical durability properties such as hardness and brightness were determined.

As wooden samples beach representing diffuseporous wood, chestnut representing ringporous wood and pine representing softwood were chosen. Massive samples were prepared according to ANSI/ASTM D 358-83 standard method. Samples were taken from cuttled from heartwood, branchless, without fissure, having no difference in color and density, timber of same tree. As excessive moisture content of samples leads to some problems such as slower drying and surface irregularities, on surfaces moisture content should be between 8-10 %.

Cellulosic, synthetic and acrylic paints were chosen because of their wide spread use in Turkish furniture industry. Before the application of the paints on wooden surfaces, firstly viscosity adjustments were made then, solid substance rates and quantity of painting solution required for sample surfaces were calculated.

Hardness was measured with Pendulum Damping Test Apparatus. In measurements Koning Pendulum Damping Test Method (ANSI/ASTM D 4366-84) was used and every passage of pendulum in front of the photocell was considered as one oscillation. Pendulum hardness values are given in Figure 1 graphically.

Surface brightness can be measured by using the light reflecting abilities of painted or varnished massive experimental panels. Brightness measurement apparatus' make measurements with the angles of 20°, 60° and 85°.

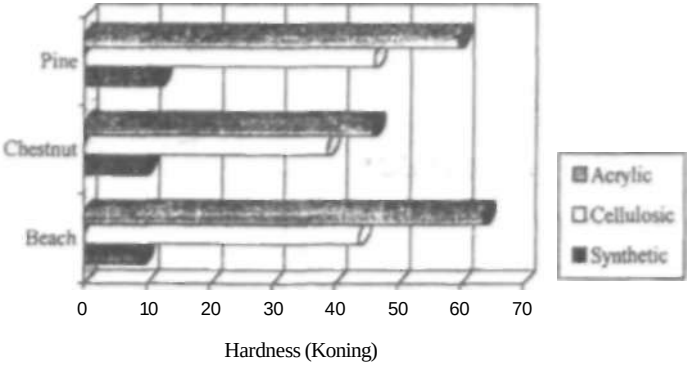

Figure I. Graphical presentation of hardness measurement results.

Measurements were made with glossmetre after dry film thickness measurement and climatization under the condition of 23±2' and 50±2 % relative humidity during 16 hours. Brightness measurements mean values are given in Figure 2 graphically.

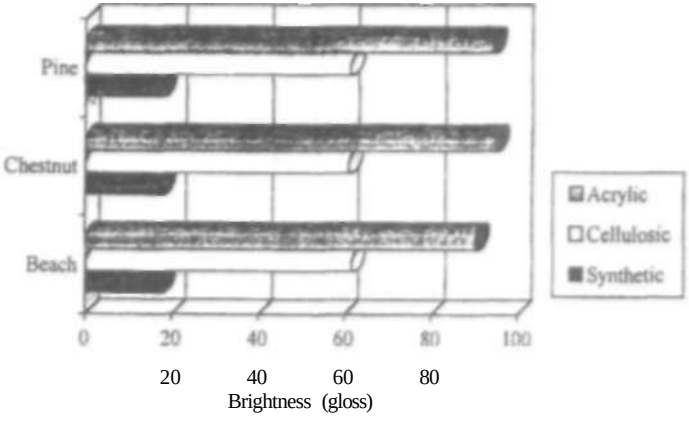

Figure 2. Graphical presentation of brightness measurement results.

As a result of statistical evaluations it has been concluded that tree species was not effective on the hardness and brightness of paint layers, but the real effect comes from the nature of paint The best results were obtained with acrylic paints from the view points of hardness and brightness, followed by cellulosic paints. Lower values were obtained with synthetic paints.

In the selection of paints to be used on furniture surfaces possible detrimental effects during utilization is very important. It is important to give priority to the selection of the most resistant paints to these negative effects. This will play an important role on the longevity of the furniture without damage.

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