EFFECT OF HEAT TREATMENT ON COLOUR, DENSITY AND DIMENSIONAL STABILITY OF SUBFOSSIL OAK WOOD

Marko Veizović, Zdravko Popović, Nebojša Todorović, Goran Milić

ABSTRACT

The subject of this paper was analysis of the influence of heat treatment on colour change and dimensional stability of subfossil oak wood. The subfossil oak logs used in this experiment originated from the Morava River in Central Serbia. Heat treatment was conducted on oak samples in a laboratory vacuum chamber at temperature of 180˚C for 4 hours. After the heat treatment, subfossil oak wood retained its natural colour, but its density and dimensional stability were changed. Density decreased from 0.637 g/cm³ to 0.620 g/cm³ and shrinkage was reduced by 25% in radial and 35% in tangential direction.

REFERENCES

Allegretti, O., Travan, L., and Cividini, R. (2008): Drying techniques to obtain white beech, ProLigno 4 (1): 11-19.

Bürck, U. V., Wagner, F. E., Lerf, A. (2012): Mössbauer studies of subfossil oak, Hyperfine Interact 208: 105–110.

Esteves B. M., Pereira H. M., (2009): Wood modification by heat treatment: a review, BioResources 4(1):370–404.

Guo, H., Zhou, H., Stevaniç J. S., Dong, M., Yu, M., Salmén, L., Yin, Y., 2017 Effects of ageing on the cell wall and its hygroscopicity of wood in ancient timber construction, Wood Sci Technol (2018) 52: 131.

Kolář, T. i Rybníček, M. (2010): Physical and mechanical properties of subfossil oak (Quercus, sp.) wood, Acta univ. Agric et silvic. Mandel. Brun. 43 (4):123-134.

Stamm A. J., Tarkow H., (1947): Dimensional stabilization of wood, J Phys Colloid Chem. 51(2):493–505.

Tjeerdsma B. F., Boonstra M., Pizzi A., Tekely P., Militz H., (1998): Characterisation of thermally modified wood: molecular reasons for wood performance improvement. Holz Roh Werkst 56(3):149–53.

Veizović, M., Popović, Z., Todorović, N., Milić, G. (2017): Drying Quality and Properties of Subfossil Oak from Central Serbia, 6th International Scientific Conference on Hardwood Processing, Natural Resources Institute Finland, Helsinki.

Veizović, M., Popović, Z., Todorović, N., Milić, G. (2018a): Drying Quality and Color of Subfossil Oak from Central Serbia, Glasnik šumarskog fakulteta, 117:164-171.

Veizović M., Straže A., Todorović N., Čufar K., Merela M., Milić G. (2018b): Characterisation of subfossil oak wood from central Serbia using SEM and FTIR spectroscopy, COST Action FP1407 “Living with modified wood”, University of Belgrade – Faculty of Forestry, Belgrade, p. 80-81.