ONLINE ISSN : 1880-7577
PRINT ISSN : 0021-4795

Mokuzai Gakkaishi
Vol. 51 (2005) , No. 2 p.92-97

[Image PDF (1097K)] [References]

Shape Changes with Alkali Treatments of Woods

Yukiko ISHIKURA[1)] and Takato NAKANO[2)]

1) Hokkaido Forest Products Research Institute
2) Faculty of Science and Engineering, Shimane University

(Received January 7, 2004)
(Accepted July 23, 2004)

Abstract: The effects of treatment with NaOH aqueous solution on the shape of Yezo spruce (*Picea jezoensis* Carr.) and its mechanism were examined by comparison with results for ramie fibers. Wood samples contracted in the longitudinal direction and twisted upon treatment with NaOH aqueous solution, which took place when wet. This shape change by the treatment was similar to that of ramie fibers. The ratio of length to width of wood samples and the length of ramie fibers decreased with increasing concentration of NaOH aqueous solution above 10%. These decreases did not arise during the drying process but during the treating process with the NaOH aqueous solution. The mechanism of the change in shape was explained on the basis of Stöckmann's model where the contraction and twist of wood samples are caused by forces in both the longitudinal and tangential directions which are components of the contractive forces in the cellulose microfibrils of the cell wall.

Keywords: alkali treatment, shape changes, twist, contractive force, cellulose microfibril

[Image PDF (1097K)] [References]

doi:10.2488/jwrs.51.92

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