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[TOP](#) > [Available Issues](#) > [Table of Contents](#) > [Abstract](#)

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Relationships between Pressure in a Closed Space and Set Recovery of Compressive Deformation of Wood Using a Closed Heating System

Eiji UDAKA¹⁾ and Takeshi FURUNO²⁾

1) Kagawa Prefectural Industrial Technology Center

2) Faculty of Science and Engineering, Shimane University

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Abstract: Treating temperature, wood moisture content, and treating time are considered to be important factors for the set recovery of compressed wood when using a closed heating system. Hence we investigated the influence of these factors on the maximum pressure in a closed space and the integration of pressure in sapwood specimens of sugi (*Cryptomeria japonica* D. Don) heat-compressed at different temperatures and moisture contents. Also, we examined the relationships between the set recovery of compressed wood and the maximum pressure in the closed space or the integration of pressure. The results obtained were as follows :

1) At the same moisture content of wood specimens, the maximum pressure in the closed space hardly changed as the treating times increased at any of treating temperatures. 2) The integration of pressure increased at each treating temperature as the treating time increased. 3) At a treating temperature of 120°C, the maximum temperature in the closed space hardly changed, and the set recovery of compressed wood decreased as the moisture content of wood specimens increased. On the other hand, the maximum pressure in the closed space increased and the set recovery of compressed wood decreased at 160°C and 200°C as the moisture content of wood specimens increased. 4) When the integration of pressure in the closed space increased, the set recovery of compressed wood hardly changed at 120°C, whereas it greatly decreased at 160°C and 200°C.

Keywords: closed heating system, maximum pressure, integration of pressure, set

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