

INTISARI

Kayu sugi yang mengandung empulur mempunyai dryabilitas yang rendah dan rentan terhadap cacat pengeringan. Penelitian “Pengaruh Diameter Lubang Pada Pusat Kayu dan Kondisi Pengeringan terhadap penyusutan dan Tegangan pengeringan pada Kayu Sugi (*Cryptomeria japonica* D. Don). dalam Pengeringan Udara Konvektif” dilakukan untuk mengatasi hal itu.

Batang pohon sugi digergaji menjadi sortimen tiang 12,3 cm x 12,3 cm x 300 cm. Pada penelitian pertama, sortimen dipotong-potong longitudinal menjadi 12,3 cm x 12,3 cm x 1,5 cm. Setiap 6 unit contoh uji menjadi satu grup, yakni untuk pengukuran kadar air awal, dan 5 unit lainnya secara berurutan diberi perlakuan pelubangan pada pusatnya berdiameter 0, 2,46, 3,075, 4,1 dan 6,15. Grup 1 sampai dengan 9 dikeringkan pada suhu 50 °C dan kelembaban 80%, sedang grup 10 sampai dengan 16 pada 80°C dan 87%. Pada penelitian bagian kedua, kayu sugi 12,3 cm x 12,3 cm x 300 dipotong-potong secara longitudinal dan dikelompokkan ke dalam 18 grup masing-masing terdiri atas dua contoh uji 12.3 cm x 12,3 cm x 9 cm dan sebuah berukuran 12,3 cm x 12,3 cm x 1,5 cm. Dalam setiap grup, contoh uji pertama tidak diberi perlakuan pelubangan dan contoh uji kedua diberi dilubangi dengan diameter 6,15 cm, sedang contoh uji ketiga digunakan untuk pengukuran kadar air. Grup 1 sampai dengan 5 dikeringkan pada 50 °C dan 80%, grup 6 sampai dengan 10 dikeringkan pada 80°C dan 87%, grup 11 sampai dengan 15 dikeringkan 100 °C dan 83%, sedang grup 16 sampai dengan 18 dikeringkan secara alami pada 15 °C dan 45%. Setiap 8 jam proses pengeringan, setiap contoh uji ditimbang dan diukur penyusutan tangensial dan radial serta panjang retak, sedang pada penelitian kedua ditambah pengukuran tegangan pengeringan. Hasil penelitian dianalisis dengan Rancangan Acak Lengkap yang disusun secara faktorial.

Hasil penelitian memperlihatkan bahwa semakin tinggi suhu pengeringan dan semakin kecil diameter lubang mengakibatkan kadar air akhir semakin rendah tetapi penyusutan tangensial, penyusutan radial, dan panjang retak serta tegangan pengeringan semakin besar. Dimensi contoh uji tidak mengubah relasi antara parameter bebas dan parameter respon tersebut..

ABSTRACT

Sugi wood containing pith having a very low dryability and a very easy to defect in drying. Study on “Influence of hole diameter in the center of wood and Drying Condition to Shrinkage and Drying Stress on Sugi Wood (*Cryptomeria japonica* D. Don) in the Convective Air Drier” is done to solve these problems.

Trunk of Sugi tree is cut longitudinally to some samples of 12.3 cm x 12.3 cm x 1.5 cm in the first part of this research. Every six unit of samples are grouped in some groups. The first unit of the sample in every group is intended to measure initial moisture content, and the other 5 units of the samples are subjected to treat a hole in the center of the sample with a diameter's dimension of 0, 2.46, 3.075, 4.1 and 6.15 cm respectively. The first until the ninth of the group are dried in dryer with 50 °C and 80%, while the tenth until 16th group are dried in 80 °C and 87%. Result of the first part of the research is to be based for designing a treatment pattern on the second part of the research. In the second part, the trunk of sugi trees are cut and grouped in to 18 groups and every group consist of two samples with a dimension of 12.3 cm x 12.3 cm x 9 cm and one more sample in dimension of 12.3 cm x 12.3 cm x 1.5 cm. In each of the groups, the first sample is subjected to treat a hole in the center of the sample with hole's diameter of 0 cm and 6.15 cm for the second sample, while the third sample is subjected as measuring initial moisture content. The first to 5th group of the sample is dried with 50 °C and 80%, group of 11 up to 15 is dried with condition of 80°C dan 87%, while group of 16 until 18 is dried in air drying condition with 15 °C and 45%. Every stage of drying, each of the sample is weighted and measured for tangential and radial shrinkage and length of the crack, and in the second part of the research, those measurement is adding with measuring about drying stress at the end of drying process. Data of the research is analysed using completely Randomized Design in factorial arrangement.

Result of the research show that the higher drying condition and smaller hole diameter, the lower the final moisture content, but accompanied by higher tangential shrinkage, radial shrinkage, accumulatively length of the crack and drying stress. The tendency of relation are not influenced by the length dimension of the sample.