ENGLISH SUMMARY

Ranta-Maunus, Alpo, A LINEAR ANALYSIS OF DRYING STRESSES IN ROUND TIMBER

In the article a cylindrically orthotropic linear elastic and viscoelastic behaviour is assumed for wood. An analytical solution is derived for drying stresses in the case of cylindrical symmetry. The stress reversal during drying is demonstrated by the linear viscoelastic analysis.

Wright, Kirsti, MODE I FRACTURE TOUGHNESS OF PINE AND SPRUCE

Mode I fracture toughness can simply be determined with CT-specimens, as proposed in the ASTM-standard. In the different orthotropy directions the value K_{IC} fracture toughness was found to be 200-360 $kNm^{-3/2}$ for pine and 200-340 $kNm^{-3/2}$ for spruce. The coefficients of variation were about 10 %. The values fit well with those presented in the literature.

If the fracture toughness is considered to be proportional to the density, the correlation for the whole sample is $R^2 = 0.59$ and for pine $R^2 = 0.60 - 0.61$. The proportionality coefficient for the whole sample was about 0.94 $Nm^{3/2}g^{-1}$ and for pine specimens about 0.87 $Nm^{3/2}g^{-1}$; these vary with the direction and the material properties.

If fracture toughness is considered as a linear combination of square of density and other variables, some better correlations are achieved: for the whole sample $R^2 = 0.77 - 0.78$ and for the pine 0.82.