



Bending and Rolling Shear Capacities of Southern Pine Cross Laminated Timber (CLT)

<https://research.thinkwood.com/en/permalink/catalogue1596>

Author: Gu, Mengzhe
Pang, Weichiang
Stoner, Michael

Year of Publication: 2016

Country of Publication: Austria

Format: Conference Paper

Material: CLT (Cross-Laminated Timber)

Topic: Mechanical Properties

Keywords: Southern Pine
US
Manufacturing
Rolling Shear
Bending
Three Point Bending Test

Language: English

Conference: World Conference on Timber Engineering

Research Status: Complete

Notes: August 22-25, 2016, Vienna, Austria
p. 1899-1906

Summary:

Southern Pine (SP) is one of the fastest growing softwood species in the Southern Forest of United States. With its high strength to weight ratio, SP becomes an ideal candidate for manufacturing engineered wood products such as cross laminated timber (CLT). Two batches of CLT panels were manufactured using visually graded SP lumbers in this study: pilot-scale panels in a laboratory setting and full-size panels in a manufacturing plant environment. The first batch of pilot-scale CLT panels was manufactured at Clemson University. The second batch of full-scale CLT panels (3m x 12.2m) was produced and CNC-sized by Structurlam in Penticton, Canada and shipped to Clemson University for testing. Four types of structural wood adhesives were selected in the panel production, namely Melamine Formaldehyde (MF), Phenol Resorcinol Formaldehyde (PRF), Polyurethane (PUR) and Emulsion Polymer Isocyanate (EPI). This paper presents the manufacturing process of SP CLT in a laboratory setting as well as structural performance verification of 3-ply SP CLT in terms of rolling shear and bending properties. The obtained performance data of 3-ply CLT in both major and minor strength directions is verified against PRG-320 Standard for Performance Rated Cross Laminated Timber. Tested results are presented and discussed.

Online Access: Free

Resource Link

<http://hdl.handle.net/20.500.12708/172>