



Challenge to Two-Hours Fire-Resistive Glued Laminated Timber Made of Japanese Cedar

<https://research.thinkwood.com/en/permalink/catalogue1711>

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Year of Publication: 2016

Country of Publication: Austria

Format: Conference Paper

Material: Glulam (Glue-Laminated Timber)

Topic: Fire

Keywords: Japanese Cedar
Fire Test

Language: English

Conference: World Conference on Timber Engineering

Research Status: Complete

Notes: August 22-25, 2016, Vienna, Austria
p. 4487-4494

Summary:

We developed a one-hour fire-proof glulam made of Japanese cedar and got the authorization as abuilding material from the Minister of Land, Infrastructure and Transportation. We also succeeded to give one-hour fire performance to cross laminated timber (CLT) using the same concept. The both structures consist of three parts which are load-bearing part, fire-die-out part and surface part. Therefore, we challenged two-hours fire-resistive glulam using the same concept. We used not only drill but also CO2 laser as an incising for lamina of fire-die-out parts and impregnated the fire retardant evenly for diffusion. The main reason to use drill is that the handling of CO2 laser is not so easy for glulam manufacturer. Comparisons of fire-performance between fire-die-out parts whose lamina were incised by drill and CO2 laser, and finger jointed load-bearing part made of Japanese cedar and larch were also achieved using the same glulam whose fire-die-out part is 90 mm in total thickness. The fire test was achieved in a furnace in accordance with a standard heating curve by ISO 834-1. Though this glulam failed two-hours fire performance by a little char and discoloration, we could know the difference in incising method and density of load-bearing part.

Online Access: Free

Resource Link

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