

## research library

one lamis	stad timber	hill on modes fo	ten conditions	
055 18110	saveg orniper	alore modes in	a me conoroario	
tern (c.) Automatic	· leaster in these	a list how we will be the	preserving. The preserving of American	- The state of the local division of the loc
Files.				
0		ross. Puratoprates		
D 10	the second	for an owner where the		1.000
Links				
			Address of the local data	
Additional inf	ormation			
Autorite				
the dataset		the product of the later scale is in products		
Lotence and				

## **Cross-Laminated Timber Failure Modes for Fire Conditions**

## https://research.thinkwood.com/en/permalink/catalogue188

Author:	Emberley, Richard		
	Torero, José		
Year of Publication:	2015		
Country of Publication:	Australia		
Format:	Conference Paper		
Material:	CLT (Cross-Laminated Timber)		
Topic:	Fire		
Keywords:	Adhesives		
	Charring Rate		
	Delamination		
	Codes		
	Failure Modes		
Language:	English		
Conference:	International Conference on Performance-based and Life-cycle Structural Engineering		
Research Status:	Complete		
Notes:	December 9-11, 2015, Brisbane, Australia		

Summary:

Tall timber building designs have utilized cross-laminated timber (CLT) significantly over the past decade due the sustainable nature of timber and the many advantages of using an engineered mass timber product. Several design methods have been established to account for the composite action between the orthogonally adhered timber plies. These methods assume perfect bonding of the adjacent plies by the adhesive. CLT designs methods for timber in fire have also been formulated. These methods rely on the relatively constant charring rate of timber to calculate a sacrificial layer to be added onto the cross-sectional area. While these methods focus on the timber failure mode of reduced cross section by charring, the failure mode of ply delamination is often overlooked and understudied. Due to the reduction of shear and normal strength in the adhesive, the perfect bond assumption can be questioned and a deeper look into the mechanics of CLT composite action and interfacial stress needs be conducted. This paper seeks to highlight the various design methods for CLT design and identify the failure mode of delamination not present in the current design codes.

Online Access: Free

## **Resource Link**

https://doi.org/10.14264/uql.2016.403 🗠