Project:

BURNING BEHAVIOUR OF ENGINEERED BAMBOO

Keywords: Bamboo, fire performance, charring, burning behaviour structures

Background and motivation
In recent years, the idea of constructing mid to high rise buildings from engineered timber products has become increasingly popular due to their aesthetic qualities, suitability for prefabrication and their ability to store carbon. Engineered bamboo products and building construction materials, such as laminated bamboo and bamboo scrimber, have been shown to match or even outperform some engineered timber products, and may have significant potential as an environmentally sustainable construction material. However, little is known about the fire performance of these products, which is a challenge to their widespread adoption at present. More specifically, understanding of charring rates, the occurrence of delamination, and the potential for self-extinction must be understood before engineered bamboo can be used with confidence in situations in which fire safety considerations must be considered.

Research objectives
For a range of engineered bamboo products, assessed over a range of heating conditions and fire scenarios, the following will be investigated:

- temperature progression through samples over time;
- development of charring rates;
- delamination in laminated bamboo; and
- potential for self-extinguishment.

Furthermore, this study will investigate how the characteristics of bamboo and the manufacturing processes of engineered bamboo may have an effect in their fire performance.

Methodology
This project will involve an experimental programme of small- and mid-scale test samples of engineered bamboo. The burning behaviour and fire performance will be investigated using varied fire testing techniques. This work is part of a wider project looking at defining the key fire safety considerations when using engineered bamboo as a building construction material.

Recommended literature
