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Carbon Sequestering and Structural Capabilities of Eucalyptus Cloeziana

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Abstract : Eucalyptus Cloeziana, commonly known as Gympie Messmate, is a fast-growing hardwood native to Australia. Its quick growth makes it advantageous for carbon sequestering, while its strength class lends itself to structural applications. Market research shows that the demand for timber is growing, especially mass timber. An environmental product declaration, or EPD, for eucalyptus Cloeziana in the Australian market has been evaluated and compared to the EPD's of steel and Douglas fir of the same region. An EPD follows a product throughout its life cycle, stating values for global warming potential, ozone depletion potential, acidification potential, eutrophication potential, photochemical ozone creation potential, and abiotic depletion potential. This paper highlights the market potential, as well as the environmental benefits and challenges to using Gympie Messmate as a structural building material. In addition, a case study is performed to compare steel, Douglas fir, and eucalyptus in terms of embodied carbon and structural weight within a single structural bay. Comparisons among the three materials highlight both the differences in structural capabilities as well as environmental impact.

Keywords : eucalyptus, timber, construction, structural, material
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