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Abstract:
The reaction of wood to moisture forms an integral part of any task in connection with this natural and renewable building material. Changes in wood moisture content lead to changes of virtually all physical and mechanical properties (e.g. strength and stiffness properties) of wood. Another effect of changes of the wood moisture content is the associated shrinkage or swelling of the material. The existence of high moisture content can initiate decay or growth of fungi. The correct estimation of timber moisture content and the subsequent initiation of potentially necessary measures are therefore essential tasks during the planning, execution and maintenance of buildings built with wood or wood-based products. This is supported by the high amount of damages on structural timber elements that can be attributed to ignorance of the reaction of wood to moisture. Also supported by this fact, the in-situ monitoring of moisture content of structural timber elements has recently received considerable interest and growth. This paper describes common methods to determine wood moisture content and evaluates them with respect to their applicability for monitoring concepts.

Stichworte: wood; moisture; measurement; monitoring; temperature; relative
humidity; moisture gradients; shrinkage; swelling

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