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
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Fire Reterdant Chemicals Affecting Combustion Resistance of Wood

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Abstract: Wood is an important material used in construction elements. However since it can be affected by biotic and abiotic deteriorating agents, it should be treated with chemical impregnating materials prior to use. In this study, the effects of water-soluble impregnating chemicals on the combustion resistance of wood was investigated. For this purpose, panels were prepared with oriental beech wood (*Fagus orientalis* L.) and pine wood (*Pinus silvestris* L.), which are widely used in industry. These panels were impregnated with potassium nitrate (KNO_3), zinc sulfate ($Zn SO_4$), sodium tetra borate ($Na_2 B_4 O_7$), sodium sulfate ($Na_2 SO_4$) and copper sulfate ($Cu_2 SO_4$). Two different methods were used for impregnation of the wood samples: extended dipping without pressure, and and full cell with either 60 minutes vacuum-60 minutes pressure, or 30 minutes vacuum-30 minutes pressure. The amount of weight lost during flame- and non-flame burning showed that impregnation with $Cu_2 SO_4$, $Zn SO_4$ and $Na_2 SO_4$ increased the fire resistant of pine and oriental beech wood. For this reason, the full-cell method is more effective in impregnation.

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