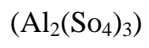




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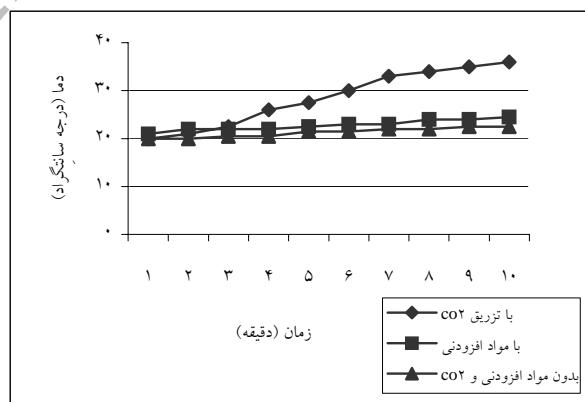
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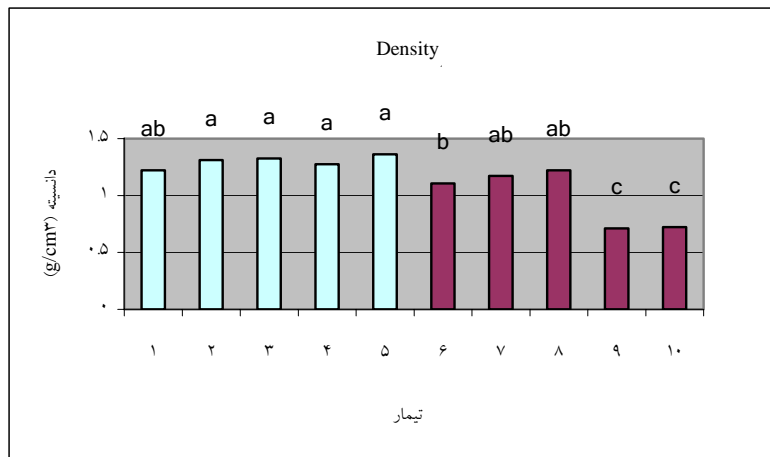
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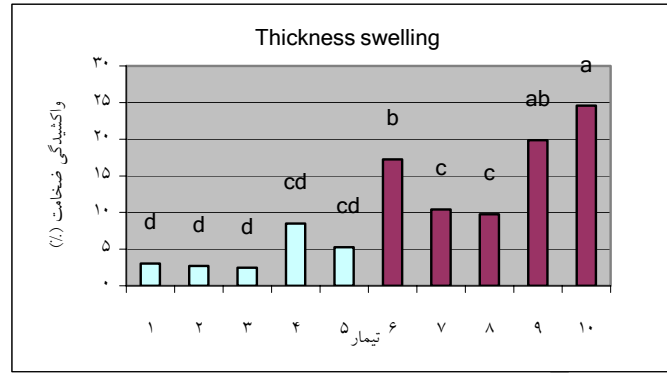


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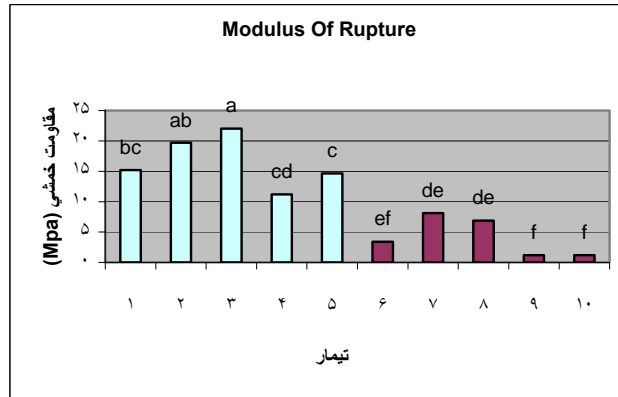
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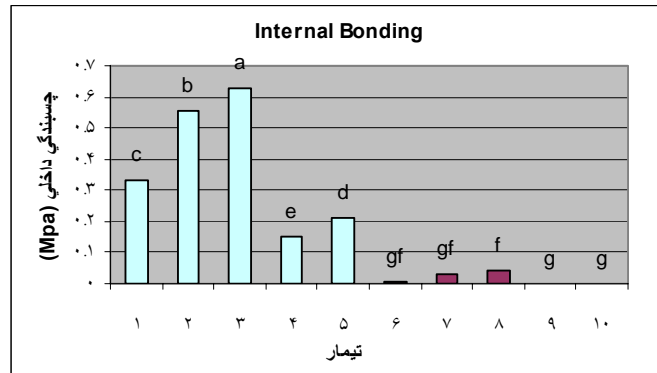
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Influence of additives & CO₂ injection on practical properties of excelsior cement boards

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Abstract

In order to examine the effect of additives and as well the injection of CO₂ on excelsior cement boards, excelsior produced from poplar (*Populus sp*) and the Portland cement type 2, and two additives, CaCl₂ (calcium chloride) and Al₂(SO₄)₃ (aluminum sulfate) with 3% & 5% concentrations was used. The results showed that the board containing 5% of CaCl₂ have better mechanical properties that may be attributed to effective neutralization of inhibitory agents of cement originated from wood and better cement hydration. CO₂ injection in mat prior the pressing had negative effect on the board properties which is considered as consequence of chemical reaction between cement and CO₂, significant increase in hydration temperature in this stage and presetting of cement before press that result in improper cement bonding. Analyzing physical & mechanical properties of produced boards showed that excelsior-cement boards treated with CaCl₂ have acceptable properties and higher bending strength and internal bonding as compared to ordinary excelsior-cement board. Therefore appropriate condition to manufacture these boards is the application of CaCl₂ 5% as an additive without CO₂ injection before pressing the excelsior-cement cake.

Keywords: cement, excelsior cement board, additives, CO₂ injection, thickness swelling, internal bonding, bending strength

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