

## Testing of the Decreasing Bond Strength of Polyvinyl Acetate Adhesive by Low Temperatures

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**Abstract :** When using wood products bonded by polyvinyl acetate, glues such as windows are the most limiting element of degradation of the glued joint due to weather changes. In addition to moisture and high temperatures, the joint may damage the low temperature below freezing point, where dimensional changes in the material and distortion of the adhesive film occur. During the experiments, the joints were exposed to several degrees of sub-zero temperatures from 0 °C to -40 °C and then to compare how the decreasing temperature affects the strength of the joint. The experiment was performed on wood beech samples (*Fagus sylvatica*), bonded with PVAc with D3 resistance and the shear strength of bond was measured. The glued and treated samples were tested on a laboratory testing machine, recording the strength of the joint. The statistical results have given us information that the strength of the joint gradually decreases with decreasing temperature, but a noticeable and statistically significant change is achieved only at very low temperatures.

**Keywords :** adhesives, bond strength, low temperatures, polyvinyl acetate

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